“CHARACTERISTICS AND DISTURBED/DISORDERED EATING BEHAVIORS OF YOUNG ADULTS WITH AND WITHOUT DIET-RELATED CHRONIC HEALTH CONDITIONS”

BY

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Carol Byrd-Bredbenner

and approved by

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ABSTRACT OF THE DISSERTATION

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DISSERTATION DIRECTOR:

CAROL BYRD-BREDBENNER

The purpose of this study was to comprehensively examine the demographic and psychographic characteristics that have been reported in the literature to be linked with disturbed eating behaviors in healthy young adults (ages 18 to 26 years) and those with selected diet-related chronic health conditions (DRCHCs; i.e., type 1 diabetes mellitus, celiac disease, cystic fibrosis, irritable bowel syndrome and inflammatory bowel diseases). An online survey assessing salient psychographic and demographic characteristics of disturbed eating was completed by a large, diverse population of young adults (N=2625). The Disturbed Eating Severity (DES) score (developed in this study utilizing existing valid instruments) indicated that nearly 30% of participants were disturbed or highly disturbed eaters. Stepwise regression revealed that the psychographic characteristics of Depression, Pressures from the Media, Dichotomous Thinking, and Weight Teasing (16 items) explained 45 percent of the variance of DES for healthy participants (n=2449). These same characteristics, except Weight Teasing, (13 items), explained 53 percent of the variance for DES in DRCHC participants (n=166). Conditional logistic regression analysis with a 1:4 match (i.e., gender and BMI) of cases (n=164) to controls (n=656) indicated DRCHC participants were twice as likely to report
being diagnosed with an eating disorder; and significantly more likely to be a disturbed
eater, exercise excessively and misuse medicine to control weight than controls.
Additionally, compared with controls DRCHC participants were significantly more likely
to report more mentally and physically unhealthy days, value health more highly, score
higher on depression and anxiety assessments, recall that childhood mealtimes were less
structured and more emphasis was placed on their mother’s weight, and were more
frequently weight teased as a child. The severity of disturbed eating in participants with
DRCHCs was greater in those who had higher body mass indexes, lacked access to health
insurance, and reported a lower quality of life. Findings from this study call attention to
the prevalence of disturbed eating behaviors among young adults and the importance of
screening and monitoring disturbed eating behaviors in youth, especially those with
DRCHCs, in order to safeguard their health.
I would have never been able to finish my dissertation without the support and guidance of my committee members, friends and family.

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Chapter 1
INTRODUCTION

As a result of medical advances, 85 percent of children with congenital or chronic health conditions now survive into adolescence\(^1\). Coping with chronic health conditions at any life stage, including adolescence, presents physical and mental challenges\(^2\). For example, treatment of certain chronic conditions can interfere with normal growth and lead to short stature, pubertal delay, and under- and over-nutrition (i.e., poor weight management)\(^1,2\). These signs of illness may cause an individual to stand out among peers, which during the adolescent years in particular, may lead to body image disturbances that reduce self-esteem and promote negative self images that may persist into adulthood\(^1\). In fact, adolescents with diet-related chronic health conditions (DRCHCs*), such as diabetes mellitus, cystic fibrosis, inflammatory bowel diseases, and irritable bowel syndrome, are reported to have lower emotional well-being, poorer body image\(^3\), and eating disturbances\(^4-9\).

Treatment and optimal management of DRCHCs require patients to follow a prescribed dietary regimen, usually for the rest of their lives. The pressures associated with complying with these regimens may cause children and teens to develop harmful thoughts and attitudes toward food and body weight as well as inappropriate eating practices. Individuals with DRCHCs, including children and teens, likely need a greater concern about body weight and/or dietary prescriptions than their healthy counterparts if they are to perform the behaviors that safeguard their health\(^10\). However, there is some evidence that this increased concern may lead to inappropriate or disturbed eating behaviors (e.g., bingeing, emotional eating, disinhibited eating, strict dieting, restraint
eating, night eating, high weight, shape, and eating concerns, and controlling body weight and shape through inappropriate compensatory behaviors [e.g., purging]) that may be precursors to eating disorders\textsuperscript{11}. For example, females prescribed insulin to help control their diabetes mellitus are at increased risk for misusing this medication to achieve their desired body weight even though this practice has dangerous health consequences\textsuperscript{12}, such as, retinopathy, neuropathy, nephropathy\textsuperscript{13}, coma, and death\textsuperscript{14}. In addition, a recent meta-analysis of studies focusing on females with type 1 diabetes mellitus found the incidence of bulimia nervosa\textsuperscript{15} (an eating disorder characterized by binge eating and purging) was at least the same as and possibly higher than in the general female population.

Previous research has indicated that a variety of demographic and psychographic characteristics are associated with disturbed eating and weight management behaviors. However, conflicting findings and methodological issues (e.g., small and/or narrowly defined sample, low instrument reliabilities, limited scope) have made it difficult to determine which demographic and psychographic characteristics are associated with a “healthy” concern for one’s body weight, diet, and health condition treatment and which are associated with an “unhealthy” concern. An increased understanding of these factors could assist healthcare providers, as well as parents and other child caregivers, in their efforts to help youth develop and maintain a healthy concern for their overall health and disease management, along with identifying those factors predictive of disturbed eating behaviors. Thus, the purpose of this study was to comprehensively examine the demographic and psychographic characteristics that have been reported to be linked with disturbed eating behaviors in healthy young adults (ages 18 to 26 years) and those with
selected DRCHCs (i.e., type 1 diabetes mellitus, celiac disease, cystic fibrosis, irritable bowel syndrome and inflammatory bowel diseases).

The main research questions for this study were:

1. Which demographic and psychographic characteristics are associated with the presence of disturbed eating behaviors in young adults?

2. Do young adults with DRCHCs differ from those without DRCHCs with regard to demographic and psychographic characteristics and presence and degree of disturbed eating behaviors?

3. Does the presence and degree of disturbed eating behaviors in young adults with DRCHCs differ by gender, body mass index, age of diagnosis, age of puberty, type of DRCHC, relationships with healthcare providers, barriers to following healthcare providers’ advice, access to health insurance, and other psychographic characteristics?

*Note: Appendix A contains a listing of all abbreviations used in this document.
Chapter 2
REVIEW OF LITERATURE

This review of literature is divided into the following sections: Types of Eating Disorders, Disturbed Eating, Diet-Related Chronic Health Conditions (DRCHCs), Diagnostic Methods for Eating Disorders and the Scales for Assessing Psychographic Constructs, Associated Risk Factors of Eating Disorders, and Theories Guiding this Study.

TYPES OF EATING DISORDERS

Body image and eating disturbances are hallmarks of eating disorders. Eating disorders included in the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (DSM-IV)\(^{16}\) criteria are: anorexia nervosa, bulimia nervosa, and/or eating disorders not otherwise specified (EDNOS). The diagnostic criteria for anorexia nervosa include the following: refusal to maintain body weight at or above normal weight for age and height (e.g., body weight less than 85% ideal body weight), intense fear of gaining weight or becoming fat even though already underweight, negative body image, denial of the seriousness of the current low body weight, and amenorrhea (i.e., absence of at least three consecutive menstrual cycles)\(^{17}\).

Individuals diagnosed with bulimia nervosa engage in recurrent episodes of binge eating and inappropriate compensatory behaviors, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise practiced to prevent weight gain\(^{17}\). The binge eating episodes usually occur in a discrete period of time (e.g., 2 hours), with the amount of food consumed being larger than what most individuals would consume in a similar time frame and under comparable
circumstances, and with a lack of control over eating during the episodes. Bulimia nervosa is diagnosed when an individual binges and uses inappropriate compensatory behaviors at least twice a week for three months or more. In addition, individuals diagnosed with bulimia nervosa have body image disturbances, especially when it comes to self-evaluations of their body shape and weight.

EDNOS is a broad category used to describe individuals who do not fully meet the criteria for anorexia nervosa or bulimia nervosa, yet still have an eating disorder. Those with EDNOS have negative body image issues and may meet some criteria for anorexia nervosa, but have regular menses or remain at a normal body weight despite significant weight loss, or may meet the criteria for bulimia nervosa but binge and purge less than twice a week for three months, and/or may binge but not use compensatory behaviors.

Binge eating disorder (BED) is a subcategory of EDNOS. It has similar criteria as bulimia nervosa, however, there is no compensatory behavior (e.g., self-induced vomiting) after an episode of binge eating. The five diagnostic criteria for BED are: recurrent binge eating; binge eating episodes with at least three of the following five behaviors (i.e., very rapid eating, eating until uncomfortably full, eating large quantities in the absence of hunger, eating alone because of embarrassment due to the amount of food eaten, and feelings of disgust, depression, or guilt after overeating); marked distress about binge eating (i.e., unpleasant physical and emotional feelings during and after binge eating); binge eating episodes occurring at least two days per week for six months; no regular use of inappropriate weight compensatory behaviors; and does not meet criteria for anorexia nervosa or bulimia nervosa.
It is important to note that patients with eating disorders might experience symptoms of anorexia nervosa, bulimia nervosa, and/or EDNOS that vary in intensity throughout their lifetimes, which makes eating disorders a challenging condition to treat and overcome.

**DISTURBED EATING**

Eating disorders are defined as a “clinically meaningful behavioral or psychological pattern having to do with eating or weight that is associated with distress, disability, or with substantially increased risk of morbidity or mortality.” On the other hand, disturbed eating behaviors are abnormal behaviors associated with eating disorders, such as restraint eating, emotional eating, disinhibited eating, night eating, binge eating, weight, shape, and eating concerns, strict dieting, night eating, and controlling one’s body weight and shape through inappropriate compensatory behaviors (e.g., purging), that do not warrant a psychiatric diagnosis of an eating disorder defined by the Diagnostic Statistics Manual. However, studying individuals who engage in these types of abnormal eating behaviors may have important research implications because these behaviors may influence body weight and health and may be precursors to eating disorders.

**Emotional Eating**

Emotional eating is the tendency to eat in response to negative emotions. This type of eating behavior is related to emotion-oriented coping (i.e., altering emotional responses to stressors) and avoidance distraction (i.e., avoiding negative emotions by
distracting oneself with a substitute task\textsuperscript{18}. Stice’s model of overeating indicates that emotional eating is strongly associated with disturbed eating behaviors\textsuperscript{19}. Since those with DRCHCs may have psychological stressors after being diagnosed, there may be a tendency to be at a greater risk for emotional eating in this population.

**Disinhibited Eating**

Disinhibited eating occurs when individuals temporarily lose control over their eating behavior (e.g., eating when not hungry, overeating, binge eating)\textsuperscript{20}. This type of behavior (i.e., disinhibited eating) occurs mostly with individuals who chronically diet or have eating disorders\textsuperscript{20}. The Dietary Restraint Theory states that individuals who “exhibit a large amount of control over eating (chronic dieters) generally eat in a systematic way to help them adhere to their dietary regimen. However, the self-control that these individuals possess is fragile and under certain circumstances they are likely to engage in disinhibited eating”\textsuperscript{20, p.190}. Thus, individuals who are chronic dieters and/or have high dietary restraint are at increased risk for falling into a pattern of self-controlled eating leading to disinhibited eating. Because individuals with DRCHCs must follow a controlled diet for their condition, it is thought that it may predispose them to disinhibited eating.

**Restraint Eating**

Restraint eating (i.e., dietary restraint) is a “psychological concept characterized by chronic weight concerns, intention to restrict food intake, weight fluctuations, and the tendency to disinhibit or counter-regulate under conditions antagonistic to self control”\textsuperscript{21}. 

Experimental studies show that restraint eaters experience disinhibition of restraint (loss of control) under conditions of negative emotions while non-restraint eaters decrease their eating or do not change their food intake\(^\text{22}\). It also has been suggested that restricting calorie intake (dieting) may set up a potential situation for individuals to experience disinhibition of restraint and, thus, overeat (i.e., binge eat)\(^\text{23}\). Because individuals with DRCHCs follow a dietary regimen requiring dietary restraint in some regards, they may be at an increased risk for disturbed eating behaviors.

**Night Eating Syndrome (NES)**

NES, first described by Stunkard et al\(^\text{24}\), was originally defined as morning anorexia, evening hyperphagia (overeating), and sleep disturbance that was exacerbated during periods of stress. However, NES is categorized differently from sleep disorders because those with NES are awake and fully aware of their eating activities\(^\text{11}\). The actual definition of NES is still evolving (e.g., definitions vary with regard to what is considered “night time” and the “amount of food intake”) and is not included in the DSM-IV\(^\text{11}\). The current research criteria for NES are the following: “1) morning anorexia, even if the subject eats breakfast, 2) evening hyperphagia; at least 50% of daily caloric intake is consumed in snacks after the last evening meal, 3) awakenings at least 3 nights per week, 4) frequent consumption of snacks during the awakenings, 5) the pattern occurs for a period of at least 3 months”\(^\text{25, p.1362}\). No research to date has assessed NES in those with DRCHCs, except for those with type 2 diabetes\(^\text{26}\).

**Mental Disorders Associated with Disturbed Eating**
Certain mental disorders, such as anxiety disorders and/or obsessive-compulsive spectrum disorders (e.g., obsessive-compulsive disorder [OCD], perfectionism, anxiety), frequently co-occur with disturbed eating. There is a higher rate of co-morbidity than would be expected by chance, with the lifetime prevalence of eating disorders in the OCD population being 13 percent, with another 18 percent having symptoms that meet criteria for sub-threshold eating disorders. OCD often predates the onset of eating disorders, which may suggest that OCD is a risk factor for developing disturbed eating behaviors that can progress to an eating disorder. OCD behaviors related to disturbed eating may include preoccupation with food (i.e., food rituals), diet, weight, and shape concerns. Perfectionism and obsessive-compulsive spectrum disorders that have non-food related obsessions and compulsions (i.e., cleanliness, orderliness, perfectionism, rigidity) also have been identified in patients with eating disorders. It is thought that perfectionism (i.e., a personality trait) and dichotomous thinking (i.e., “black and white” thinking) may mediate the relationship between extreme concerns about weight and shape and intense rigid dieting. Because individuals with DRCHCs are prescribed a dietary management plan for their disease, they likely will be more preoccupied with their food choices than those without such conditions. If they also have an obsessive-compulsive spectrum disorder this could possibly increase their risk for disturbed eating behaviors or eating disorders.

DIET-RELATED CHRONIC HEALTH CONDITIONS

Chronic health conditions have a biological, psychological, or cognitive basis, last or expected to last for at least one year, and produce signs and symptoms that may limit
function and activities and require medical care or related services\textsuperscript{34}. To gain a greater understanding of the relationship between chronic biological conditions and body image and/or eating disorders, a comprehensive review of the literature was conducted. The current review updates previous reviews, identifies trends across myriad chronic biological health conditions previously associated with body image and eating disturbances, and compares the risk factors associated with these disturbances. These DRCHCs (i.e., diabetes mellitus, cystic fibrosis, celiac disease, irritable bowel syndrome, and inflammatory bowel disease) were selected because they are more common in the young adult population than other DRCHCs (e.g., cardiovascular disease, certain cancers)\textsuperscript{35}.

All studies were found via searches of MEDLINE, PSYCINFO, and SCIENCE DIRECT using these keywords: chronic disease, diabetes, cystic fibrosis, irritable bowel syndrome, inflammatory bowel disease, Crohn’s, celiac, eating behavior, disordered eating, disturbed eating, emotional eating, restrained eating, disinhibited eating, obsessive-compulsive spectrum disorder, night eating syndrome, eating disorders, and body image. Studies were limited to those published from January 1980 to March 2011 and those that focused on children, adolescents, teens, and/or young adults. The start date was chosen because eating disorder research and publications started to become more prominent around the early 1980’s. The computer search was followed by a manual search of publications cited in the papers that met the search criteria.
Type 1 Diabetes Mellitus and Disturbed Eating

Type 1 diabetes mellitus is an autoimmune disorder that can be diagnosed as early as when a child is born, but can occur at any time in the lifespan\textsuperscript{36}. It has a prevalence rate of 3 to 4 children per 1,000 in Western countries\textsuperscript{37}. In this chronic health condition, the pancreas stops producing insulin, which causes the body to be unable to use glucose normally\textsuperscript{36}. Thus, most individuals with type 1 diabetes currently must obtain insulin exogenously for the rest of their lives. Typically, this is achieved through insulin injections administered once or more daily. In addition to insulin injections, specialized exercise, diet, and weight maintenance plans are needed to keep blood glucose levels normal. Maintenance of normal glucose levels is important because uncontrolled levels increase patients’ risk for heart disease, hypertension, dyslipidemia, and diabetic nephropathy, neuropathy, and retinopathy\textsuperscript{36}, as well as coma and death\textsuperscript{14}.

Newly diagnosed type 1 diabetes patients frequently find it challenging to cope with this chronic health condition\textsuperscript{38, 39}. Before diagnosis, patients usually drop weight unintentionally due to the nature of the condition. It is suspected that, at first, some patients may feel positively about this weight loss\textsuperscript{14}. However, once diagnosed and placed on an insulin regimen, patients tend to regain lost weight and fluids, sometimes gaining substantially more weight than was lost before treatment began (i.e., sometimes up to 5 kg overnight)\textsuperscript{40}. This weight gain occurs because insulin prompts the body to reduce blood glucose levels, with one removal route being fat deposition\textsuperscript{36}. A large increase in weight over a short period of time may negatively affect some type 1 diabetes patients’ body image and self-esteem and cause them to fear that they will be unable to control their weight\textsuperscript{40-42}. 
The need to constantly follow a strict diet and frequently monitor blood sugar levels may cause some type 1 diabetes patients to become overly concerned with their diets\textsuperscript{43}. Dietary management may be especially difficult for young children and adolescents when they notice friends and family members without type 1 diabetes are able to eat whenever and whatever they want. Over time, this constant awareness of one’s diet and disease treatment may lead to eating disturbances\textsuperscript{10}.

In recent years, researchers have explored eating disorders among those with type 1 diabetes\textsuperscript{15, 44}. Some studies report that eating disorders are more prevalent and persistent among those with type 1 diabetes\textsuperscript{45-49} than in the general population, whereas other studies indicate the risk is no greater than in the general population\textsuperscript{15, 50, 51}. A recent review examining 12 empirical studies indicated that females with type 1 diabetes are not at an increased risk for developing an eating disorder (i.e., anorexia nervosa and/or bulimia nervosa), but did suggest that EDNOS is prevalent in this population\textsuperscript{52}. In general, disturbed eating in type 1 diabetes patients is more common among girls than boys\textsuperscript{53}. Bingeing and purging\textsuperscript{45, 54, 55} (i.e., bulimia nervosa, and EDNOS or BED) tend to be the most common types of disturbed eating found among girls with type 1 diabetes.

In the general population, purging can include vomiting, the misuse of laxatives, and excessive exercise. Those with type 1 diabetes also may purge by omitting insulin (i.e., “diabulimia”\textsuperscript{56})\textsuperscript{55, 57-60}. The side effects of continual misuse of insulin can be detrimental, leading to retinopathy, neuropathy, nephropathy, heart disease, and urinary tract infections\textsuperscript{14}.

The varying findings related to incidence of eating disorders among type 1 diabetes patients may be because of differences in the screening tools used, along with
the age of diagnosis, duration of type 1 diabetes at time of assessment, the type of medical care received (e.g., general vs. specialized physician, nutrition counseling, psychological counseling), and salient psychographic characteristics not being taken into account. Other limitations as stated by Young-Hyman et al. may include the following: “Lack of weight matched control subjects when comparing the prevalence of eating disorders or subclinical disturbed eating behaviors; loss of satiety mechanisms via hormonal dysregulation, and dietary prescriptions as potential causes perceived as loss of control over food intake; the intent of behavior in those seeking to prevent weight gain secondary to treatment; incomplete psychological characterization of samples, including psychological constructs such as loss of control, autonomy, and self-efficacy over blood glucose and weight; potential misclassification of behaviors and attitudes as reflecting disturbed eating behaviors when they possibly reflect skills and attitudes learned as part of diabetes care/self-management regimen; and the need for refinement of existing measurement tools and development of assessment methods that address diabetes-specific attitudes, concerns, and behaviors that are prescribed as part of treatment; as well as psychological mechanisms that are beyond the control of the patient.”

It is not clear why some patients with type 1 diabetes are at risk for eating disorders, however, Ismail has proposed that family psychiatric history, age of diagnosis, personality characteristics (i.e., perfectionism and impulsiveness), peer environment, stigma, diabetes-related fears (e.g., fears of injection), and other factors are involved. Although it is not clear whether the incidence of eating disorders is higher among those with type 1 diabetes, disturbed eating practices among these individuals does occur. Overall, the characteristics of those with type 1 diabetes who have disturbed eating behaviors are not
well understood, which makes it very difficult to identify at risk patients and create care plans and interventions designed to prevent the development of disturbed eating.

**Type 2 Diabetes Mellitus and Disturbed Eating**

The presence of eating disorders in type 2 diabetes mellitus patients is confounded by the association of disturbed eating with obesity (e.g., binge eating disorder)\(^{62}\), a comorbidity of type 2 diabetes\(^{40}\). Type 2 diabetes will not be explored in this literature review because obesity and, possibly binge eating disorder, precede this condition\(^{63,64}\), rather than occur as an outcome. In addition, the focus of this study is young adults and, until recently, the prevalence of type 2 diabetes in this population group was low\(^{65}\). The prevalence rates of type 2 diabetes in young adults has risen over the last 10 years from a rate of 0.8% in 1996 to a rate of 1.6% in 2006\(^{66}\), but older adults (i.e., ages 65 to 74 years) still have a higher rate of type 2 diabetes (18.4%)\(^{66}\).

**Cystic Fibrosis and Disturbed Eating**

Cystic fibrosis (CF), an autosomal recessive genetic disorder characterized by dysfunction of the exocrine glands and production of abnormally thick, tenacious mucus secretions that obstruct glands and ducts, occurs in 1:2500 live births\(^{36}\). Respiratory organs, reproductive organs, sweat glands, salivary glands, and digestive organs (i.e., pancreas, intestine, and liver) are affected. Thus, CF patients are at high risk for malnutrition due to maldigestion and malabsorption of food\(^{36}\). This can make it difficult for CF patients to meet their nutrient needs. Long-term treatment for these individuals includes increased energy intakes with 35 to 40 percent of total calories coming from fat,
along with vitamin and mineral supplementation, pancreatic enzyme replacement therapy, and regular chest exams. Sometimes oral and enteral tube feedings may be necessary if patients cannot meet the demands of nutrient needs from food sources. Dietary management is of great concern in this population.

Due to recent medical advances in treatment procedures, survival rates for CF patients have increased dramatically. However, research has suggested that the intense dietary regimens followed by individuals with CF over the years may affect mental and physical health. Physically, growth and pubertal development delays occur, while mentally, quality of life declines. Some health-related quality of life domains that have been examined in the literature include social functioning, coping, emotional responses, concerns for the future, interpersonal relationships, body image, career issues, and general health perceptions. Interestingly, body image and eating disturbances among CF patients remain an understudied topic.

Parents usually have a difficult time coping with treatment of children with CF. Parents’ views of their CF child’s eating habits may be distorted by the emphasis and pressure health professionals put on the importance of the child’s dietary intake and need for weight gain. Parents of children with CF tend to view their child’s behavior as more problematic at mealtimes and generally more stressful than parents who do not have chronically ill children. Some problems parents report are; their CF child has poor appetite, problems chewing food, reluctance to eat at mealtimes, takes more than 20 minutes to finish meals, and spits out food. The cause of these problems and eating disturbances are not well understood and can increase over time.
Eating disturbances have been found in CF patients\textsuperscript{9}, however little research has examined the relationship between eating disturbances and CF, and the limited studies available have conflicting results. Eating disturbances found in CF patients include atypical eating disorder behaviors such as spitting out chewed food\textsuperscript{70}, food avoidance, preoccupation with food, bulimic tendencies\textsuperscript{72}, body image distortions, bodily function distortions with regard to gastrointestinal function, and misuse of pancreatic enzyme (i.e., digestive enzyme) replacement therapy\textsuperscript{9}. These types of disturbed eating behaviors in CF patients pose harm to their health.

Some studies report that CF patients are at increased risk for eating disorders (i.e., EDNOS)\textsuperscript{73, 74}, whereas other studies report that the prevalence rates of eating disorders in cystic fibrosis patients do not differ from rates in the general population\textsuperscript{7, 72, 75}. These conflicting results likely are due to the same factors noted in the type 1 diabetes literature described above. In addition, CF patients tend to be diagnosed much younger than the ages typically associated with the onset of eating disorders. In fact, only one study could be located that included older CF patients, i.e., 17 to 71 years old\textsuperscript{76}.

**Celiac Disease and Disturbed Eating**

Celiac disease (also called celiac sprue) affects 1 out of every 120 to 300 persons in Europe and North America\textsuperscript{77}. This lifelong inflammatory condition affects genetically predisposed individuals. In celiac disease, inappropriate T-cell mediated immune response against ingested gluten results in inflammation of the small intestine\textsuperscript{77}. Individuals with celiac disease cannot tolerate gluten, a protein that contains amino acid sequences with prolamin fractions. Gluten containing foods are found in wheat, rye, and
Long-term ingestion of foods containing gluten causes mucosal malabsorption in the small intestine because intestinal villi decline in number, thereby reducing absorptive surface areas and enzyme secretions. Distressing intestinal symptoms include distended abdomen, flatulence, and diarrhea.

Diagnosis of celiac disease can occur at any age and often coincides with stressful life events, pregnancy, or viral infections. Long-term treatment for celiac disease includes a restrictive diet that is gluten-free. The need for permanent dietary restriction of gluten containing foods, along with the distressing gastrointestinal symptoms, may affect eating attitudes and behaviors of patients with celiac disease.

The limited research examining celiac disease patients has revealed an association between celiac disease and eating disorders. For instance, a single case study of a 23-year-old female indicated that she had celiac disease before being diagnosed with anorexia nervosa. The authors reporting this case study indicated that the dietary regimen for treating celiac disease could have been the trigger for the eating disorder because the patient had an extreme avoidance of food, fear of abdominal pain, and absence of loss of control on feeding (i.e., she was a highly restrained eater). In addition, she was unsatisfied with her body shape and feared gaining weight. A large (N=283) cross-sectional study reported a high rate of disturbed eating in celiac disease patients, especially a higher rate of bulimia nervosa.

Disturbed eating practices observed in celiac disease patients include dieting (i.e., for shape and weight reasons), excessive exercising, vomiting, overuse of laxatives, and binge eating. No other disturbed eating practices in celiac disease patients could be located in the literature.
Inflammatory Bowel Disease & Irritable Bowel Syndrome and Disturbed Eating

Crohn’s disease and ulcerative colitis are two major chronic intestinal disorders of unknown etiology that are known as inflammatory bowel diseases (IBD). Crohn’s disease affects the gastrointestinal tract from the oral cavity to the rectum, whereas ulcerative colitis involves the mucosal tissue of the colon and rectum. IBD manifests during childhood and adolescence in 20 to 25 percent of patients. The incidence of IBD varies globally, but there seems to be a higher incidence rate in Northern Europe, Scandinavia, New Zealand, and the United States (0.3 to 0.8%) than other countries.

Management of IBD involves a prescribed dietary regimen and usually a pharmacological agent (i.e., corticosteroids). “The chronic, unpredictable gastrointestinal symptoms and complications that occur with IBD, along with the required treatments, all impose psychological and social stresses on young patients.”

Irritable Bowel Syndrome (IBS) is found in nearly 15-20% of children and adults. IBS is the most common reason individuals seek medical attention with nearly 40% of them also having some form of lactose intolerance. Women are two times more likely to have the condition versus men. “Diagnostic criteria for IBS include at least 3 months of continuous or recurrent symptoms of the following: abdominal pain or discomfort relieved with defecation or associated with change in frequency of stool or changed consistency of stool; 2 or more: altered stool frequency (more than 3 per day or less than 3 per week), altered stool form (lumpy/hard or loose/watery), altered stool passage such as straining/urgency/feeling of incomplete evacuation, passage of mucus in the stool or bloating and feeling of abdominal distention.” Dietary management of IBS
includes encouraging regular eating patterns and avoiding offending foods, adequate fluid intake, and close monitoring for other food allergies or intolerances (e.g., dairy, wheat, yeast, eggs, gluten). Dietary management is individualized based on the patient’s needs and severity of IBS symptoms. As with IBD, the constant gastrointestinal symptoms and self-shame of having the condition, all can affect one’s quality of life.

Qualitative research has shown that youth aged 7 to 19 years with IBD struggle with food restrictions (e.g., “I have to think about every little thing I eat, while others do not.”). They tend to perceive themselves negatively and differently than their peers (e.g., “I’m thinner, pale, my hair is thinner. I don’t like how I look now. I look sickly. They’ve name called me to death saying ‘fat girl’”). IBD patients are most distressed by their physical (e.g., energy level) and psychosocial (e.g., body image) concerns, which may be associated with eating disturbances. Female adolescents with IBD tend to express more concerns about weight gain or Cushingoid features (e.g., rounded face) associated with corticosteroid treatments. IBS patients also experience body shame, which can have a major impact on one’s self-esteem, social behavior, and vulnerability to other psychological problems. There is little evidence to suggest that eating disorders are more prevalent in the IBD or IBS population because this has been understudied, but body image and eating disturbances (e.g., dietary restraint) are known to occur in this population (i.e., IBD & IBS).
DIAGNOSTIC METHODS FOR EATING DISORDERS AND SCALES FOR ASSESSING PSYCHOGRAPHIC CONSTRUCTS

This following section discusses diagnostic interview and self-report methods used to assess eating disorder symptoms and develop diagnoses. Instruments that assess associated risk factors for eating disorders, such as body image, will follow.

Diagnostic Interview Measurements

Many diagnostic interview measurements are used to assess disturbed eating patterns and associated psychopathology (e.g., depression, self-esteem). Commonly used interview instruments are described below. These interviews can be used either for research or in clinical settings to obtain detailed information regarding disturbed eating symptoms and making DSM-IV diagnoses\(^8\).

Eating Disorder Examination. The Eating Disorder Examination (EDE)\(^8\) is a 62-item semi-structured interview and is one of the most established inventories for assessing the behavioral (i.e., compensatory behaviors) and attitudinal (i.e., body image) psychopathology of eating disorders, and categorizing subjects into a specific eating disorder diagnosis\(^9\). The EDE contains four scales with both behavioral and attitudinal questions in each scale: Dietary Restraint, Eating Concerns, Weight Concerns, and Shape Concerns. The Dietary Restraint scale is a measure of the attempt to restrict food intake to influence shape and weight and/or for the purpose of sense of control. The interview topic questions that create the score for Dietary Restraint focus on restraint of eating, avoidance of eating, food avoidance, dietary rules, and empty stomach. The Eating
Concerns scale measures one’s preoccupation with and feelings towards eating food. The following interview topics create the score for Eating Concerns: preoccupation with food (eating or calories), fear of losing control over eating, eating in secret, social eating, and guilt about eating. The Shape Concern scale assesses individual feelings toward one’s body shape and size. The interview topics that form the score for Shape Concerns are: desire for a flat stomach, preoccupation with shape or weight, importance of shape, fear of weight gain, dissatisfaction with shape, discomfort with shape, discomfort seeing body, avoidance of exposure, and feelings of fatness. Lastly, the Weight Concerns scale measures feelings toward one’s weight. Interview topic questions on the Weight Concerns scale address the following: importance of weight, reaction to prescribed weighing, preoccupation with shape or weight, dissatisfaction with weight, and desire to lose weight. Each scale contains obligatory questions that are to be asked in a specific manner (i.e., with a particular emphasis placed on specified words or phrases). In addition, the phrase “over the past four weeks” or “over the past 28 days” is incorporated in each obligatory question to clearly indicate behaviors referring to this time period. Patients usually are given a blank calendar before the interview to help them with recall during the interview.

The interviewer rates the frequency the participant engaged in each behavior during the past 28 days or month using a 7-point scale (i.e., feature is not present, present on 1 to 5 days, present less than half the time [6 to 12 days], present half the time [13 to 15 days], present more than half the time [16 to 22 days], present almost every day [23 to 27 days], and present every day). Some items are rated on a 7-point severity scale (i.e., absence of feature to feature present to an extreme degree). If the interviewer has
difficulty deciding between ratings, the lower rating (i.e., the less symptomatic) should be chosen. Scale scores are calculated by averaging the rating for each item on the scale. An overall or ‘global score’ is created by averaging the four scale scores. Higher scores indicate greater eating disorder symptomatology.

In addition to the four scales, a BED module based on the DSM-IV diagnostic criteria is included in the EDE. This module is used only when a participant has clearly stated they have had bulimic episodes over the preceding 12 weeks (i.e., 3 months). The BED module includes the following categories of questions: features associated with binge eating that are present, distress about binge eating, dietary restriction outside of bulimic episodes, subjective bulimic episodes (i.e., purposeful fasting), self-induced vomiting, laxative and diuretic misuse, and driven exercises.

The EDE interview takes 30 to 60 minutes to complete, which can be a burden to the participant and time consuming for the researcher. Additionally, researchers must be trained to use the instrument, which can be costly. However, this instrument has good reliability and validity, hence its widespread utilization for diagnosing eating disorders and identifying disturbed eating behaviors.

It is not known whether this instrument is valid for use in patients with DRCHCs because the EDE interview questions may be sensitive to the specific dietary regimens that patients must follow. Thus, it may falsely categorize those with DRCHCs as having an eating disorder. Nonetheless, the EDE instrument has been used in studies of eating disorders and type 1 diabetes patients, with some studies slightly modifying it to include questions on attitudes and behaviors of insulin misuse. The EDE child
version has been used to assess eating disorders in children with celiac disease\textsuperscript{79} and in cystic fibrosis\textsuperscript{7} patients.

**Child Version Eating Disorder Examination.** The Children’s EDE Version\textsuperscript{95} has four modifications to the EDE. First of all, the language is changed to make the interview more comprehensible for children. Secondly, the introduction to the interview is different; parents complete a diary that is given to the child at the beginning of the interview and this is used as a memory cue. Thirdly, questions on the Child Version of the EDE also ask about actual and intended behavior that a child might engage in when not controlled or supervised by their parents or caregivers. Lastly, the importance of weight and shape are administered as a card sort task. Instead of the child being asked direct questions about the extent of which weight and shape are important in terms of self-evaluation, children are asked a more general question (i.e., “what things are important to you in your judgment of yourself”)\textsuperscript{96}, examples are given to the child to help them clarify the concept of self-evaluation, such as popularity. Next, the child is asked to name things personally important to them, which are then written on separate cards and arranged in order of importance\textsuperscript{96}.

**Interview for Diagnosis of Eating Disorders-IV.** The Interview for Diagnosis of Eating Disorders-IV (IDED)\textsuperscript{97} is a semi-structured interview that provides a differential diagnosis for the DSM-IV eating disorders (e.g., Anorexia Nervosa, Bulimia Nervosa, and EDNOS). The IDED’s rating scales that reflect DSM-IV diagnostic criteria sets it apart from the EDE\textsuperscript{88} in the following manner: 1) symptom ratings are related to DSM-IV
diagnostic criteria; 2) interviewers can assess the presence or absence of a specific symptom as described by the DSM-IV with interview questions that address these diagnostic criteria; 3) interviewers can diagnose anorexia and bulimia nervosa, as well as BED and other sub-threshold diagnoses (e.g., EDNOS)\(^97\). The IDED also can produce data that allow for complex analyses of psychopathology\(^98\).

The interview contains four main parts: General Assessment and History (I), Anorexia Nervosa (II), Bulimia Nervosa (III), and Binge Eating Disorder [Sub-type EDNOS] (IV)\(^99\). In section I, initial questions are asked to gather basic information on the patient’s medical and family history, along with his or her current problems related to eating (e.g., self-imposed forbidden foods). This helps build rapport with the patient before asking sensitive eating disorder questions (e.g., “Do you ever binge?”). Section II investigates the presence or absence of anorexia nervosa symptoms that assess drive for thinness (e.g., refusal to maintain appropriate weight for height), fear of weight gain (e.g., intense fear of weight gain), body image distortion (e.g., feels “fat” even though not significantly overweight), and amenorrhea (e.g., missed cycle for more than 3 months).

Section III assesses presence or absence and/or frequency of recurrent binge-eating episodes, feeling of loss of control during binge-eating, purgative behaviors, frequency of binge eating, and concern with body shape and size. Section IV assesses frequency of recurrent binge-eating episodes, consumption of high-calorie and easily ingested food during a binge, inconspicuous eating during a binge, repeated efforts at dieting, negative affect prior to binge-eating episodes, frequent weight fluctuations greater than 10 pounds, absence of purgative behaviors, realization that eating pattern is abnormal/out of control,
depressed mood and self-deprecating thoughts after a binge, and body size dissatisfaction. For sections II, III, and IV combined, a 20-item, 5-point Likert rating scale (with varying scale scores) is used to score interview responses and determine whether the patient meets the diagnostic criteria for one or more eating disorders. Follow-up, open-ended questions (e.g., How often does your body size affect the way you feel about yourself?) also are included. A minimal rating of 3 or more for each of the Likert items is the operational definition used to indicate the presence of a diagnostic eating disorder.

Researchers have reported good internal consistency, content validity, concurrent and discriminant validity, and excellent interrater reliability for differential diagnosis of specific eating disorder categories using the IDED. However, no evidence of its use in assessing eating disorders in those with DRCHCs could be located. If the IDED were to be used with those having a DRCHC, diet-related questions and other items may need to be modified, along with further testing to establish reliability and validity. In addition, a trained interviewer is needed to conduct the interview and score participants accurately, which can be costly. Each interview may take up to one hour, which can be a burden for researchers and participants.

**Structured Interview for Anorexic and Bulimic Syndrome for DSM-IV and ICD-10.** The current version (third edition) of the Structured Interview for Anorexic and Bulimic Syndromes-Expert Review for DSM-IV (SIAB-EX) assesses eating disorders and other symptoms associated with eating disorders (i.e., depression, anxiety) in adolescents
and adults ages 12 to 65 years. It also makes diagnoses consistent with the DSM-IV and the International Statistical Classification of Diseases and Related Health Problems (ICD-10) schemes.

SIAB-EX contains 87-items, with most items coded on a 5-point scale ranging from 0 (symptom/problem not present) to 4 (symptom/problem very severely present). The measurement of SIAB-EX items are made at two time points: severity of symptoms in the last three months before assessment (i.e., current) and assessment from the past. The scales used to assess eating disorder symptoms are: Body Image and Slimness Ideal (i.e., fear of gaining weight or getting fat); General Psychopathology (i.e., depressed mood); Sexuality and Social Integration (i.e., sexual anxieties, partner-relationship); Bulimic Symptoms (i.e., limits for caloric intake); Inappropriate Compensatory Behaviors to Counteract Weight Gain, Fasting, and Substance Abuse (i.e., “Did you use laxatives in the last three months or in the past to avoid gaining weight?”); and Atypical Binges (i.e., “How often have you had a marked atypical eating binge [grazing] in the last 6 months?”).

The standardized scoring procedures for the SIAB-EX are complex and require subjective opinions from the interviewer; thus, interviewer training is necessary to achieve good reliability and objectivity with this measurement tool. The SIAB-EX has good internal consistency, interrater reliability, and convergent and discriminant construct validity but can be a burdensome for participants as the interview takes at least 1 hour to conduct. This instrument has been used to assess eating disorders in those with type 1 diabetes, but no evidence of it being used to assess eating disorders in other medical conditions could be located. Herpertz et al slightly modified the SIAB-EX for
use with a type 1 diabetes population by adding an additional question (i.e., “Do you fast because your doctor told you to lose weight to reduce your individual insulin dose?”) so that the SIAB-EX would better reflect the unique needs of this medical population.

**Structured Clinical Interview for DSM-IV Axis I Disorders.** The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) is the most widely used and established diagnostic interview tool for assessing DSM-IV eating disorder categories and Axis I psychiatric disorders. Axis I psychiatric disorders are clinical disorders, including major mental disorders, as well as developmental and learning disorders.

The SCID uses a decision tree approach that guides the interviewer in testing diagnostic hypotheses as the interview is conducted. It begins with an introductory overview (e.g., demographic information, history of present and past periods of psychiatric disturbance, treatment history, and current general functioning questions) which is followed by these diagnostic modules: psychotic disorders (e.g., schizophrenia), mood disorders (e.g., major depression), substance abuse disorders (e.g., alcohol), anxiety disorders (e.g., panic disorder), somatoform disorders (e.g., hypochondriasis), and eating disorders (e.g., anorexia nervosa).

The diagnostic modules usually begin with closed ended questions (i.e., ‘yes’ or ‘no’ response), with the interviewer then asking the participant to elaborate on their answers (e.g., “Tell me about that.”). Additional follow-up questions may be needed to clarify responses and obtain sufficient information for making final ratings. Sometimes interviewers may add their own questions to enable them to make the best clinical judgment when scoring an individual. The ratings for the diagnostic criteria are scored:
1= symptom described in criterion is clearly absent or criterion statement is clearly false; 2= sub-threshold condition that almost meets the threshold for criterion; 3= threshold for criterion is met or criterion statement is true; and ?= inadequate information to score the criterion as either 1, 2, or 3. For example, when using the criteria for bulimia nervosa, a rating of 1 indicates there is no evidence to suggest the presence of binge eating episodes; a rating of 2 is given when the individuals indicates he or she engages in binge eating but the description of a typical “binge” did not meet the criterion of a “large amount of food”; a rating of 3 denotes that the individual’s description of binges met the criteria for recurrent binge eating; and a “?” rating occurs when the individual claims to binge, but cannot remember any of the details. An individual is diagnosed with an eating disorder when all criteria receive a score of 3.

The reliability for SCID-I categorical constructs is reported in terms of Kappa, a statistic that corrects for chance agreement. The SCID-I has fairly good reliability with interrater reliability Kappa coefficients for Axis I psychiatric diagnoses ranging from 0.57 to 1.0. Specialized training needed by interviewers, along with the cost of purchasing the instrument, make the SCID-I costly and burdensome to researchers. The interview can take 30 to 60 minutes to complete depending on which diagnostic modules are used. However, unlike other structured diagnostic instruments, the SCID is “clinician friendly,” and can be adapted to exclude diagnostic modules that are irrelevant for researchers’ purposes. Even though this instrument is well-established in the eating disorder field, no evidence of the use of the SCID-I with individuals who have DRCHCs could be located.
Self-Report Measures

Due to time and money constraints, structured interviews that assess eating disorders are not always feasible. Self-report measures for assessing eating disorders provide a lower cost and accurate method for identifying those at risk for eating disorders or with eating disorder symptoms. However, self-report measures alone cannot establish an eating disorder diagnosis. On the other hand, self-report measures can be used to assess symptoms of eating disorders (e.g., frequency of binge eating episodes), screening those at risk for eating disorders, and assessing associated risk factors of eating disorders (e.g., body image disturbance). The most commonly used self-report measures for assessing eating disorder symptoms are described in this section.

Eating Disorder Inventory. The Eating Disorders Inventory (EDI) is a widely used measurement tool for assessing eating disorder symptoms and psychological variables thought to be associated with eating disorders. It also is used as a screening device and/or an outcome measure for patients in treatment for eating disorders. The EDI can be used in research and clinical settings and is fairly easy to administer, score, and interpret. The original EDI instrument had 64 items with 8 Likert scales (i.e., Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears). Three of these scales assess attitudes and behaviors regarding eating, weight, and shape (i.e., Drive for Thinness, Body Dissatisfaction, Bulimia), while the other five scales measure general psychological traits relevant to eating disorders. Each scale item is rated using a 6-point Likert scale (i.e., 1=always, 2=usually, 3=often, 4=sometimes, 5=rarely, 6=never) that takes
participants approximately 15 to 25 minutes to complete. Higher scores indicate greater likelihood of an eating disorder or eating disturbance. The EDI has good internal consistency on all scales (0.80 or higher) and good test-retest reliability (0.77 or higher)\textsuperscript{108}.

A revised version of the EDI (EDI-2)\textsuperscript{107} was created to include other risk factor measurements found to be associated with eating disorders. The EDI-2 contains 91 items with 11 scales measured using the same 6-point Likert scale as the EDI. The scales from the EDI are augmented to include three additional scales (i.e., Asceticism, Impulse Regulation and Social Insecurity). These three additional scales have good validity\textsuperscript{109, 110}. Even though the EDI-2 has shown good validity in previous studies\textsuperscript{107, 111}, other studies have found that the psychometric properties of the EDI-2 are not generalizable to other types of populations, such as younger patients\textsuperscript{112}.

The third revision of the EDI (i.e., EDI-3)\textsuperscript{88} further enhanced this instrument to include six composite scores (i.e., Eating Disorder Risk, Ineffectiveness, Interpersonal Problems, Affective Problems, Overcontrol, and General Psychological Maladjustment). The 91-item EDI-3 contains 12 scales (i.e., Drive for Thinness, Bulimia, Body Dissatisfaction, Self-Esteem, Personal Alienation, Interpersonal Insecurity, Interpersonal Alienation, Interoceptive Deficits, Emotional Dysregulation, Perfectionism, Asceticism, and Maturity Fears)\textsuperscript{88}. The EDI-3 uses a 6-point Likert scale with a slightly different scoring system from previous EDI instruments (i.e., 0=always, 0=usually, 1=often, 2=sometimes, 3=rarely, 4=never) and can be used with a wider age range (i.e., 13-53 years old)\textsuperscript{113}. 
The EDI-3 takes participants approximately 20 minutes to complete and must be purchased by the researcher for use. Reliability and validity are strong for the EDI-3. Only the EDI and EDI-2 have been used to assess eating disorders in medical populations, such as type 1 diabetes  and CF. Because this instrument has been used in these DRCHC populations, it is plausible that it can be used to assess eating disorders in other DRCHC populations.

**Eating Disorder Examination Questionnaire.** Another commonly used instrument for assessing attitudes and behavioral psychopathology of eating disorders is the Eating Disorder Examination Questionnaire (EDE-Q). This instrument, adapted from the Eating Disorder Examination interview (EDE), is a 28-item, 7-point Likert (0=no days, 1=1-5 days, 2=6-12 days, 3=13-15 days, 4=16-22 days, 5=23-27 days, 6=everyday) instrument that has four scales: Restraint, Eating Concerns, Shape Concerns, and Weight Concerns. Scale scores are computed by averaging the ratings for each item in the scale. An overall or ‘global score’ can be created by averaging the four scale scores. Higher scores indicate greater eating disorder symptomatology.

The EDE-Q uses the same questions as the EDE interview and is easier to score. The EDE-Q is relatively cost effective to administer, taking less than 15 minutes to complete. Even though the EDE and EDE-Q contain identical items and have relatively good reliability, some investigators have noted that the questionnaire and the interview sometimes differ in the results because the self-report questionnaire makes it difficult to assess items that are conceptually complex for individuals to answer. For instance, when answering questions on the frequency of binge eating, it leaves the
decision as to what constitutes a large amount of food up to the individual. In addition, young women may interpret a binge as being a loss of control rather than the amount of food consumed\textsuperscript{118}. Thus, researchers have suggested enhancing the EDE-Q by providing definitions of the terms used or explanation of the items when the questionnaire is administered\textsuperscript{119}. The EDE-Q has been used to assess eating disorder symptoms in patients with DRCHCs\textsuperscript{75,120} (e.g., type 1 diabetes, CF), however, its use is less extensive than the EDI or EDI-2 instruments.

**Night Eating Syndrome.** The Night Eating Questionnaire (NEQ)\textsuperscript{121} assesses the behavioral and psychological symptoms of night eating syndrome (NES). The NEQ contains 14, 5-point Likert items (e.g., never to always) and 1 additional item being a dichotomous (yes/no) (i.e., check here if your mood does not change during the day). The first 9-items assess variables occurring before sleep onset (e.g., how hungry are you usually in the morning). Items 10 to 12 are answered only by participants who get up in the middle of the night for reasons other than just to use the bathroom. Questions 13 and 14 are only answered by participants who eat when they wake up in the middle of the night. The dichotomous item is scored as 0 or 1 while all other items are scored 0 to 4. All items scores are summed to obtain a global score (except one that is only used to rule out the presence of the parasomnia sleep-related eating disorder)\textsuperscript{121}. Higher global scores indicate greater likelihood of NES. The NEQ is a reliable and valid instrument and is easy to administer and score\textsuperscript{121} but to the researchers knowledge has not been examined in the population of those with DRCHCs.
**Eating Attitude Test.** The most commonly used screening tool for measuring eating disorder symptoms is the Eating Attitude Test (EAT)\(^\text{122}\). The EAT-40 is a 40-item 6-point Likert type scale (i.e., always, usually, often, sometimes, rarely, never) that has good reliability and validity\(^\text{123}\) for identifying individuals at risk for eating disorders. The EAT-40 was originally developed to assess characteristic behaviors and attitudes in patients with anorexia nervosa. A factor analysis of the EAT-40 revealed three major factors: Dieting, Bulimia and Food Preoccupation, and Oral Control\(^\text{123}\). The 14 other items that did not load on these three factors were eliminated thereby creating a shorter version, the EAT-26.

The EAT-26 correlates well with other measures of eating disorder symptoms\(^\text{124}\), is easy to administer, and quick for participants to complete. Negatively phrased items (e.g., I am terrified about being overweight) are scored from 0 to 3, with scores assigned to the responses from the most to least symptomatic of an eating disorder (i.e., always=3, usually=2, often=1, sometimes=0, rarely=0, never=0). Scoring is reversed for positively phrased questions (e.g., I display self-control around food). Scale scores are computed by summing the scores of all items in each scale and a total score is calculated by summing scale scores. The possible score range for this instrument is from 0 to 78, with a score of 20 or higher indicating eating disorder symptomatology\(^\text{123}\).

The sensitivity and specificity of the EAT-26 is of concern because it appears to have a high false positive rate\(^\text{125}\). In addition, the EAT-26 tends to provide higher estimated rates of eating pathology in type 1 diabetes patients\(^8\). This higher estimated rate is likely because the Dieting scale focuses on dietary concerns and patients with diabetes (or other DRCHCs) have dietary management concerns and, thus, would be
expected to score higher on this scale. To overcome this potential error measurement, some researchers have attempted to modify the EAT-26\textsuperscript{45,126} by discounting items (i.e., removing items during scoring and then pro-rating scales) that may be scored positively because an individual has diabetes (e.g., “I am aware of the calorie content of the food I eat”)\textsuperscript{45} or use interview-based instruments such as the EDE\textsuperscript{8} or SCID\textsuperscript{127} that add diabetes-specific items (i.e., insulin omission for weight loss and binging during hypoglycemic episodes).

The EAT-26 cannot diagnose patients with eating disorders, but is a good screening device. It does not provide diagnoses for eating disorders, whereas semi-structured interviews can. Despite the fact that interview-based instruments are considered the gold standard for diagnosing eating disorders, interview-based instruments may miss important information about pathological eating behaviors that do not fit in a specific diagnostic category\textsuperscript{8}. For example, rating scales in the EAT-26 can assess behaviors such as vomiting, which may be too sensitive of a topic for a subject to reveal during an interview.

**RISK FACTORS ASSOCIATED WITH DISTURBED EATING AND EATING DISORDERS**

There are a number of other factors (e.g., physical, mental, and social well-being) that are associated with eating disorders that can be assessed using self-report measures. One instrument described above, EDI\textsuperscript{128}, assesses many of these associated risk factors. The following section addresses these factors and describes other instruments that can be used to assess them.
Depression

Mood disorders and poor emotional well-being tend to be common among individuals with eating disorders. This also has been shown to be true for those with DRCHCs. The Beck Depression Inventory (BDI) is a 21-item, 4-point Likert scale (rated from 0 to 3 in terms of severity) that assesses severity of depressive symptom-attitudes (i.e., mood, sense of failure, guilt feelings, distortion of body image, pessimism, lack of satisfaction, sense of punishment, self-hate, self accusations, self punitive wishes, crying spells, irritability, social withdrawal, indecisiveness, work inhibition, sleep disturbance, fatigability, weight loss, somatic preoccupation, and loss of libido). Scores are calculated by summing the ratings of individual items. Higher scores indicate higher depression severity. BDI scores are interpreted as follows: scores of <10 indicate no or minimal depression; scores of 10 to 18 indicate mild to moderate depression; scores of 19 to 29 indicate moderate to severe depression; and scores of 30 or higher indicate severe depression.

Although originally designed to be administered by trained interviewers, the BDI often is self-administered and can be completed in five to ten minutes. This instrument has good reliability and validity as an indicator of depression severity. The BDI has been used extensively in assessing depression symptoms in those with DRCHCs, with evidence of good reliability and validity.

Another scale commonly used to assess severity of depression is the Zung Self-Rating Depression Scale (SDS). The SDS is a 20-item, 4-point Likert scale that "quantifies the symptoms of depression, using diagnostic criteria of the presence of a
depressed affect, and its physiological and psychological concomitants as test items. Participants rate each scale item from 1 (a little of the time) to 4 (most of the time). Scoring is reversed for symptomatically positive items (e.g., The morning is when I feel best). Scores are calculated by summing the item scores. A total score exceeding 50 indicates the likelihood of depression. The SDS has good reliability and validity, and has been used frequently with DRCHCs populations, such as those with type 1 diabetes, celiac disease, and irritable bowel syndrome. This instrument is easy to administer and low in participant burden as it takes less than 10 minutes to complete.

As can be evidenced, both of these instruments, BDI and SDS, are very similar in measuring the same outcome, depression severity, and have been used extensively in many populations with adequate results. Either of these instruments is useful for reliably assessing depression.

The Patient Health Questionnaire (PHQ-9) is a 9-item, 4-point Likert scale self-report screening tool used to assess severity of depression. This instrument is a version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module that scores each of the 9 DSM-IV criteria as 0 (not at all), 1 (several days), 2 (more than half the days) and 3 (nearly every day). A global score for depression severity is calculated by summing all items. Score ranges from 0 to 4 indicate no depression, 5 to 9 mild depression, 10 to 14 moderate depression, 15 to 19 moderately severe depression, and 20 to 27 severe depression. The PHQ-9 is a reliable and valid self-report instrument that is brief and easy for clinicians and researchers to assess depression severity and make criteria-based diagnoses for depressive disorders. This
instrument has been used in clinical studies across a wide range of medical conditions (e.g., diabetes, crohn’s disease) with adequate reliability and validity.

Anxiety

Anxiety is a feeling of apprehension and fear that can be triggered by stressful life events (e.g., diagnosis of a disease). It is thought that those with DRCHCs may have higher levels of anxiety due to the stressful situations and/or events encountered.

Anxiety severity can be assessed with the Beck Anxiety Inventory (BAI). This 21-item, 4-point Likert scale measures severity of anxiety during the past month. A global severity score is calculated by summing the score of all items (i.e., not at all, mildly-but it did not bother me much, moderately-it was not pleasant at times, and severely-it bothered me a lot, are scored as 0, 1, 2, and 3, respectively). Scores between 1 to 21 indicate very low anxiety, 22 to 35 indicate moderate anxiety, and greater than 36 indicates very high levels of anxiety which is a cause of concern.

This a reliable and valid instrument that is easy to administer and score. This instrument has been assessed in adults with type 1 diabetes, celiac disease, and irritable bowel syndrome.

The Zung Self-Rating Anxiety Scale (SAS) is another reliable and valid instrument that quantifies the level of anxiety with individuals experiencing anxiety related symptoms in the past week. This is a 20-item questionnaire uses a 4-point Likert scale (little or none of the time=1, some of the time=2, good part of the time=3, most of the time=4). A global score is calculated by summing all items (5 items are reverse scored). Higher scores indicate increased anxiety. The following score ranges categorize the severity level of anxiety for individuals: 25 to 44 is normal range, 45 to 59
is middle to moderate, 60 to 74 is marked to severe, and 75 to 80 is extreme. SAS has assessed anxiety severity in subjects with DRCHCs (e.g., type 1 & 2 Diabetes) with good reliability.

The Generalized Anxiety Disorder (GAD-7) is a brief anxiety scale that is reliable and valid in assessing anxiety severity in a clinical and research setting or in the general population. This brief 7-item instrument uses a 4-point Likert scale (not at all=0, several days=1, more than half the days=2, nearly every day=3) that has subjects respond to a list of criteria corresponding to anxiety (e.g., feeling nervous, anxious or on the edge) over a period of the last two weeks. A global score is calculated by summing all items. The following score ranges categorize the severity level of anxiety for individuals: 0 to 4 is minimal, 5 to 9 is mild, 10 to 14 is moderate, and 15 to 21 is severe. This instrument is fairly new to the field but many new research studies are starting to utilize GAD-7 as a principal measure of anxiety severity. It is important to note that this instrument only assesses the severity of anxiety. Thus, a clinical interview would be required to confirm the presence and type of anxiety disorder.

**Perfectionism**

Perfectionism is “the practice of demanding oneself or others a higher quality of performance than is required by the situation,” stated Hollender, one of the first researchers to define perfectionism. Others define it as the “setting of excessively high standards for performance accompanied by overly critical self-evaluation.” It is thought that perfectionism begins as positive and rewarding for individuals, but can become excessive, negative, and destructive for numerous reasons. For example, if a
previously positive “perfectionist” behavior fails to achieve a higher goal, such as gaining self-esteem, an individual may decide to raise his or her standards which can lead to negative effects (i.e., neurotic perfectionism)\textsuperscript{156}. Research has shown an association between eating disorders and perfectionism,\textsuperscript{33} with perfectionism and dichotomous thinking mediating the relationship between extreme concerns about shape and weight and rigid and intense dieting\textsuperscript{33}.

The Multidimensional Perfection Scale by Frost et al (MPS-F)\textsuperscript{155} is a 35-item, 5-point Likert scale (strongly disagree to strongly agree) instrument that assesses perfectionism (i.e., personality trait) with the following 6 scales: Parent Expectations (7-items), Concerns Over Mistakes (8-items), Personal Standards (9-items), Parental Criticism (2-items), Organization (6-items), and Doubt of Actions (3-items). The Parent Expectations scale assesses the beliefs that one’s parents set very high goals. The Concern over Mistakes scale assesses the tendency to associate mistakes with failure and a loss of respect from others. The Personal Standards scale assesses setting very high standards for oneself and criticizing oneself according to how well one achieves. The Parental Criticism scale assesses the belief that one’s parents are overly critical. The Organization Scale assesses one’s tendency to be orderly. The Doubt of Actions scale assesses how much one doubts his or her ability to complete tasks. Each scale is summed for a mean scale score. A global score is calculated by summing all items are summed for a mean score, except the Organization scale items. The MPS-F is a reliable and valid instrument\textsuperscript{155,157}. However, to the researchers knowledge this instrument has not been assessed in populations with a DRCHC.
Dichotomous Thinking

“Dichotomous thinking is a form of cognitive rigidity where individuals see reality in polarized categories of “either-or” rather than as a continuum of possibilities”\textsuperscript{158}. It also has been identified as a key maintaining factor in cognitive behavioral models of eating disorders\textsuperscript{158}. The model suggests that rigid dietary “rules”, and increased likelihood of binge eating following any transgression from these dietary rules is affected by dichotomous thinking in eating disorders\textsuperscript{159}. The Dichotomous Thinking in Eating Disorder Scale (DTEDS)\textsuperscript{158} assesses this personality trait. This is a 11-item, 4-point Likert scale (1=not at all true of me, 2=slightly true of me, 3=fairly true of me, 4=very true of me) with two scales (Eating [4-items], General [7-items]). Summing of all items obtains a global score. Higher scores indicate a greater degree of dichotomous thinking. The DTEDS has not been assessed in populations with DRCHCs but holds promise.

Obsessive Compulsive Disorder

It has been suggested that perfectionism is a “necessary but insufficient trait for development of obsession compulsive disorder (OCD)\textsuperscript{160,p.793}.” This occurrence is related to the psychopathology of OCD in performing compulsions in “exactly the right way” in response to obsessions and the need for symmetry and exactness\textsuperscript{156}. Obsessive compulsiveness can be assessed using the Yale-Brown Obsessive Compulsive Scale (Y-BOCS)\textsuperscript{161}. The Y-BOC is a 10-item, 5-point rating severity scale with items 1 to 5 measuring Obsessions (e.g., time spent on obsessions) and items 6 to 10 measuring Compulsions (distress when resisting compulsions). All items 0 hours/day, 0 to 1 hours/day, 1 to 3 hours/day, 3 to 8 hours/day, more than 8 hours/day are scored 0, 1, 2, 3
and 4 respectively. The 10 items can be summed for a global score or scale scores can be created by summing responses to the Obsessions items and summing responses to the Compulsions items. Higher scores indicate greater severity in obsession compulsiveness. This is a valid and reliable instrument that is very easy to administer and score. However, it assumes that one already has OCD. The Y-BOCS has been measured in medical populations (e.g., schizophrenia) but not in other DRCHCs to the researcher’s knowledge.

The Florida Obsessive Compulsive Inventory (FOCI) is a self-report questionnaire that has separate scales for symptom enumeration (20-item checklist) and symptom severity (5-item severity scale). The checklist (yes or no responses) includes items such as being bothered by thoughts/images, worrying about terrible things, and being driven to perform specific acts that are considered OCD behaviors. Participants complete the 5-item, 5-point semantic differential (e.g., no avoidance to extreme avoidance) symptom severity scale if they check “yes” for one or more OCD behaviors in the 20-item checklist. Higher scores on the severity scale indicate elevated OCD severity. This is a reliable and valid instrument that is easy to administer and score.

An instrument that assesses depression, anxiety, and obsessive compulsiveness, along with a number of other psychological disorders is the Symptom Checklist-90-Revised (SCL-90-R). The SCL-90-R is a 90-item, 5-point self-report rating scale that evaluates a broad range of psychological problems and symptoms of psychopathology. This multidimensional tool assesses nine symptoms of psychopathology (i.e.,
Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism) and provides three global distress indices (i.e., global severity index [overall psychological distress], positive symptom distress [intensity of symptoms], positive symptom total [reports number of self-reported symptoms]. The SCL-90-R takes 15 to 20 minutes to complete and is a reliable and valid instrument. This instrument has been assessed in some DRCHC populations (e.g., diabetes). However, it can be costly for the researcher in that it must be purchased for use.

**Disturbed Eating Behaviors**

The Emotional Eating Scale (EES), developed by Arnow et al, is a 25-item, 5-point Likert scale (i.e., 1=no desire to eat, 2=small desire to eat, 3=moderate desire to eat, 4=strong desire to eat, 5=overwhelming urge to eat) that assesses how emotions (e.g., resentful, discouraged, shaky) influence an individual’s urge to eat. Higher scores indicate greater tendencies to emotional eating. The EES is a reliable and valid instrument for both eating disordered and non-eating disordered populations. This instrument has not been used with DRCHC populations, but likely would be an appropriate measure.

The Dutch Eating Behavior Questionnaire (DEBQ) has a 13-item 5-point Likert (1=seldom to 5=often) emotional eating scale with items similar to those on the EES (e.g., Do you have a desire to eat when you have nothing to do?). This instrument has good reliability and validity. The DEBQ also contains two additional scales, Restrained Eating (10-items) and External Eating (10-items). The restrained eating scale
assesses intended and actual control/restriction of food intake (e.g., If you have put on weight, do you eat less than you usually do?) whereas the external eating scale assesses eating in response to external stimuli regardless of the internal state of hunger or satiety (e.g., If food tastes good to you, do you eat more than usual?)\textsuperscript{168}. Both of these scales have good reliability and validity in individuals with and without eating disorders\textsuperscript{169}. In addition, the DEBQ has been measured in populations with DRCHCs (i.e., diabetes\textsuperscript{170}).

Restrained eating also can be measured using the Three-Factor Eating Questionnaire (TFEQ)\textsuperscript{171} or the Revised Restraint Scale (RRS)\textsuperscript{172}. The TFEQ is a 51-item instrument with 36 items being true/false questions and 15 item being 4-point Likert scales (with varying answer choices)\textsuperscript{171}. This self-report instrument has 3 scales: Dietary (cognitive) Restraint (e.g., When I have eaten my quota of calories, I am usually good about not eating anymore), Disinhibition (e.g., When I feel anxious, I find myself eating), and Perceived Hunger (e.g., I often feel so hungry that I have to eat something)\textsuperscript{171}. Higher scores indicate greater dietary restraint, disinhibition, and perceived hunger\textsuperscript{171}. The TFEQ has good reliability and validity\textsuperscript{171} but may be a burden for participants because it contains many items. A shorter version (18-item, 4-point Likert scale [definitely true=4 to definitely false=1) assesses cognitive restraint, uncontrolled eating, and emotional eating behaviors with fairly good reliability\textsuperscript{173}.

The RRS assesses restraint and weight fluctuation (in pounds), while the DEBQ and TFEQ assess intended and actual control/restriction of food intake. One limitation to the RRS is that the weight fluctuation items can account for more than 70 percent of the variance in the total score\textsuperscript{174}. Thus, the RRS identifies a different sort of dieter compared with other restraint scales (i.e., dieters with higher susceptibility toward overeating).
RRS\textsuperscript{172} is a 10-item scale with 4 or 5-point Likert items that assess Concerns with Dieting (e.g., How often are you dieting?; 5-point Likert scale [never=0 to always=4]) and Weight Fluctuations (e.g., In a typical week, how much does your weight fluctuate?; 5-point Likert scale [0-1 pounds=0 to 5+ pounds=4]). Higher scores indicate higher dietary restraint with the highest possible score being 32\textsuperscript{172}. The RRS has good reliability and validity\textsuperscript{172}. No studies reporting the use of TFEQ or RRS with DRCHC populations (i.e., type 1 DM, CF, celiac, IBD, and IBS) could be located.

**Quality of Life**

Quality of life refers to an individual’s physical (e.g., diet, health, and protection from disease and/or pain) and psychological well-being (e.g., positive and negative emotional states)\textsuperscript{175}.

The Medical Outcomes Study 36-item short-form health survey (SF-36) with semantic differential and 5- and 6-point Likert type scales, measures health status. It is designed for use in clinical practice, health policy evaluations, and in general populations\textsuperscript{176-178}. It has been used in over 50 countries as part of the International Quality of Life Assessment Project with reports of good reliability and validity\textsuperscript{179}. There are eight scales that assess the following general health concepts: Physical Functioning (10-items; e.g., vigorous activities, such as running, lifting heavy objects, participating in strenuous sports), Role Limitations due to physical health problems (4 items; e.g., cut down the amount of time you spend on work or other activities), Bodily Pain (2-items; e.g., how much bodily pain have you had during the past 4 weeks?), General Health Perceptions (5-items; e.g., I am as healthy as anybody I know), Vitality (4-items; e.g., did
you feel full of pep?), Social Functioning (2-items; e.g., during the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors or groups?), Role Limitations due to emotional problems (3-items; e.g., accomplished less than you would like), and Mental Health (5-items; e.g., have you felt downhearted and blue?). This instrument has been used with those who have diabetes, gastrointestinal disease, irritable bowel syndrome, and depression. This questionnaire has items that represent multiple operational indicators of health including: behavioral function and dysfunction, distress and well-being, objective reports and subjective ratings, and self-evaluations of general health status.

A shorter version, SF-12, contains 12 items from the SF-36 and was developed to reduce participant burden of the SF-36. It takes two to three minutes to complete and produces physical and mental health summary scores similar to the SF-36 (i.e., 90% agreement in both general and disease specific populations). However, this instrument can be costly for the researcher to purchase.

Another quality of life instrument that is brief, reliable, and valid is the Centers for Disease Control and Prevention Health-Related Quality of Life 14-item measure (CDC HRQOL-14). The standard 4-items (CDC HRQOL-4) from the Healthy Days module questions (e.g., now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?) have been used in the state-based Behavioral Risk Factor Surveillance System (BFRSS) since 1993. Since 2000, the CDC-HRQOL-4 has been in the National Health and Nutrition Examination Survey for those ages 12 and older. The two other modules of the CDC HRQOL-14 include the Activity Limitation 5-item module (e.g., are you...
limited in any way in any activities because of any impairment or health problem?) and the Healthy Days Symptoms 5-item module (e.g., during the past 30 days, for about how many days have you felt worried, tense or anxious?). The three modules combined comprise the full CDC HRQOL-14 measure. In comparison to other standardized health status measures (e.g., SF-36), the CDC HRQOL demonstrates acceptable construct and criterion validity for healthy adults as well as adults with chronic health conditions and disabilities. This instrument also takes less than 3 minutes for participants to complete and is easy for researchers to score.

Another aspect of quality of life relates to body image. The Body Image Quality of Life Inventory (BIQLI) is a 19-item, 7-point bipolar self-report questionnaire (-3=negative effect, -2=moderate negative effect, -1=slightly negative effect, 0=no impact, +1=slightly positive effect, +2=moderate positive effect, +3=positive effect) that measures Effects on Feelings About Self and Life in General, Emotional States, Same and Other Sex Relations, Eating and Exercise, Grooming Activities, Sexual Experiences, and Family and Work/School Contexts. The BIQOL has good internal consistency (alpha=0.95), test-retest reliability (alpha=0.79), and convergent validity with body satisfaction (measured using the Body Area Satisfaction Scale [subscale of the Multidimensional Body Self-Relations Questionnaire]), self investmentment in appearance (measured using the Appearance Schema’s Inventory), internalization of cultural standards of beauty (measured using Sociocultural Attitudes Towards Appearance Questionnaire [SATAQ]), and the degree to which women internalize and accept cultural standards of beauty (measured using Objectified Body Consciousness...
Scale [OBCS])\textsuperscript{190}. No use of the BIQOL with individuals who have a DRCHC could be located in the literature.

Disease specific QOL instruments have been developed to address the unique QOL issues of various diseases. In type 1 and 2 diabetes patients, the 15-item Diabetes Quality of Life (DQOL) questionnaire\textsuperscript{191} can be used to predict life satisfaction with diabetes (n=6 items) and self-care adherence (n=9 items). It has good reliability ($\alpha=0.85$) and validity\textsuperscript{191}. Some items on the DQOL use a 5-point Likert scale that asks about the frequency of negative impact from diabetes or the treatment of diabetes (i.e., “How often do you worry that you will miss work?”) with responses from 1 (never) to 5 (all the time), while other items gauge satisfaction with diabetes using a 5-point Likert scale (i.e., “How satisfied are you with the time it takes you to manage your diabetes?”) with responses from 1 (very satisfied) to 5 (very dissatisfied). Scoring of the DQOL items generates information regarding problem frequency and dissatisfaction in diabetes populations\textsuperscript{191}.

The Cystic Fibrosis Quality of Life questionnaire (CFQL) is a disease-specific 52-item, 6-point Likert scale (i.e., first 5 scales: 1=all of the time, 2=most of the time, 3=a good bit of the time, 4=sometimes, 5=occasionally, 6=never; other 4 scales 1=strongly agree to 6=strongly disagree) validated for adults with CF\textsuperscript{68}. This instrument has nine scales measuring factors of importance to adults with CF (i.e., Physical Functioning [10 items], Social Functioning [4 items], Emotional Responses [8 items], Treatment [3 items], Chest Symptoms [4 items], Body Image Concerns [3 items], Interpersonal Relationships [10 items], Career Issues [4 items], and Future Concerns [6 items]). Physical Functioning addresses physical ability and mobility. Social Functioning assesses enjoyment of life through socializing. Emotional Responses evaluate emotions
about how one feels about their disease, such as anger, embarrassment, irritability, feeling fed-up, anxiety, and frustration. The Treatment scale assesses time spent on therapies and the extent to which therapies intrude on daily life activities. The Chest Symptoms scale evaluates the presence of coughing or breathlessness and the difficulty of dealing with these symptoms. Body Image Concerns scale assess feelings about body weight and height. Interpersonal Relationships evaluate ability to establish and maintain new relationships, including intimate relationships. The Career Issues scale addresses challenges related to finding and maintaining a job or college enrollment. The Future Concerns scale focuses on general concerns related to CF and longevity. Scores for each item in a scale are calculated (e.g., interpersonal relationship scale: sum responses to the 10 items on this scale, with 1 point=strongly agree to 6 point=strongly disagree, subtract 10 from the summed number, then divide by 50 and multiply by 100) which obtains a value between 0 (worst possible) and 100 (best possible). A score of 50 or less on a scale reflects difficulties in that area. This easy to administer, self-report instrument has good reliability for each scale (i.e., Cronbach alpha coefficients range from 0.72-0.92). It was interesting to note that Abbott et al (2008) recruited cystic fibrosis patients to examine their quality of life, and it just so happened that 22 percent of them also had type 1 diabetes mellitus.

There are relatively few disease-specific quality of life instruments for IBS and IBD that are easy to access without additional fees (i.e., cost) for researchers. The Irritable Bowel Syndrome Quality of Life (IBS-QOL) instrument is a reliable and valid disease specific measure for assessing quality of life in IBS patients that has an associated cost to it’s use. It is a self-report quality of life measure that can be used to
assess the impact of IBS and its treatment. The IBS-QOL is a 34-item, 5-point Likert scale (answer choices for 14 items are 1=not at all, 2=slightly, 3=moderately, 4=quite a bit, 5=extremely; answer choices for 20 items are 1=not at all, 2=slightly, 3=moderately, 4=quite a bit, 5=a great deal) with 8 scales (Dysphoria, Interference with Activity, Body Image, Health Worry, Food Avoidance, Social Reaction, Sexual, Relationships)\textsuperscript{192, 193}. The individual responses to the 34-items are summed and averaged for a total score which is transformed to a 0 to 100 scale for ease of interpretation\textsuperscript{192, 193}. Higher scores indicate better IBS-specific quality of life\textsuperscript{193}. It takes participants 10 minutes to complete and is reliable and valid\textsuperscript{192}.

The Short Inflammatory Bowel Disease Questionnaire (SIBDQ) is a 10-item, 7-point graded scale (e.g., 1=all the time, 2=most of the time, 3=a good bit of the time, 4=some of the time, 5=a little of the time, 6=hardly any of the time, 7=none of the time) that has good reliability and validity in assessing health-related quality of life in IBD (i.e., Crohn’s and Ulcerative Colitis) patients\textsuperscript{194}. The questionnaire is designed for participants to answer items based on how they have been feeling over the last two weeks. The SIBDQ is composed of four scales (i.e., systematic=2 items, bowel=2=items, social=2 items, emotional=3 items) and is summed for one overall health-related quality of life score\textsuperscript{194}. Total scores range from 10 (poor health-related quality of life) to 70 (optimum health-related quality of life)\textsuperscript{194}. The SIBDQ has minimal participant burden, and is easy to score and interpret for clinicians.

There have been a couple of celiac disease specific quality of life measures developed over the last century\textsuperscript{195-197}. However, the Celiac Disease Questionnaire (CDQ) is the most recently developed measure that has been tested to have good reliability and
validity in both English and German versions\textsuperscript{197}. The CDQ is a 28-item, 7-point graded scale (i.e., 1=all the time, 2=most of the time, 3=a good bit of the time, 4=some of the time, 5=a little of the time, 6=hardly any of the time, 7=none of the time) with four scales containing 7-items each (i.e., emotion, social, worries, and gastrointestinal)\textsuperscript{197}. Scale scores are summed with possible score ranges 7 to 49, and a summed overall total score ranging from 28 to 196\textsuperscript{197}. Higher scores are indicative of better health-related quality of life\textsuperscript{197}. The CDQ only takes 10 minutes for patients to complete and is easy for researchers to score and interpret.

**Body Image Disturbance**

Body image disturbance (BID) is usually defined as an inaccurate internalized representation of one’s weight, shape, and appearance which tends to lead to body dissatisfaction\textsuperscript{189}. An acute activating event or situation (i.e., a trigger), such as an accident or injury, disease (e.g., diabetes), menarche, early puberty, or high BMI, can affect body image, predict changes in attitudes toward appearance, and lead to BID\textsuperscript{186,189}. For example, when an individual is first diagnosed with a DRCHC, especially during a young age or when they are going through puberty (i.e., bodily changes), this acute activating event may trigger BID. This also could be due to the fact that some DRCHCs (i.e., type 1 diabetes and inflammatory bowel diseases) add extra pounds to patients because of the medications (e.g., insulin, steroids) routinely taken to manage the condition\textsuperscript{40}. Newly diagnosed patients who already have a high BMI at diagnosis are at an even greater risk for negative body image that can lead to BID\textsuperscript{189}. Thus, it is thought
that individuals who have a high BMI, are relatively newly diagnosed (<2 years), and/or at a young age with a DRCHC may be at a greater risk for BID.

BID is a criterion for the diagnosis of anorexia nervosa and bulimia nervosa\textsuperscript{17}. Prospective studies have clearly demonstrated that BID is the most consistent predictor of the onset of disturbed eating behaviors\textsuperscript{198}. Factors leading to BID are not well understood. One of the most broadly conceptualized frameworks for explaining BID was created by Cash\textsuperscript{186}. This model was adapted and modified by Thompson et al\textsuperscript{88,p.177} and includes four organizing principles: socialization by culture, personality characteristics, interpersonal experiences, and activating events and situations.

Sociocultural factors (e.g., drive for thinness and beauty) heavily influence the development of body image in Western societies\textsuperscript{189} by stressing the importance of extreme thinness, which is unattainable by many\textsuperscript{199}. The pressure to conform to societal standards may lead to body image disturbance. Gerbner’s Cultivation Theory posits that, “beliefs and attitudes regarding the real world are influenced by how media portrays the world as a straightforward function of the amount of exposure”\textsuperscript{200,p.7}. Thus, it is suggested that people who watch more television or frequently read magazines are more likely to accept society’s expectations and standards (e.g., being thin, young, and beautiful) that are portrayed in the media. For this reason, assessing participants’ media use and the amount of time (i.e., hours per week) and importance placed on media (i.e., television, movies, and magazines) is an important risk factor that may influence one’s BID. Cash\textsuperscript{186,p.40} agrees with this by stating, “as internalized by individuals, these cultural values foster the acquisition of basic body image attitudes, which predispose them to construe and react to life events in particular ways.” Social comparison theory
also posits that individuals compare themselves to others “to determine their status or rank on certain appearance dimensions”\(^\text{88}, p. 179\). “Upward comparisons” (i.e., comparing oneself to others who are more attractive or thinner) may lead to BID\(^\text{201, 202, 201, 203, 204}\).

Although most individuals exposed to the so-called societal “thin ideal” do not develop disturbed eating patterns, it has been suggested that some individuals have personality characteristics that may make them more susceptible to the sociocultural influences affecting body image\(^\text{88}\). Internalization\(^{205}\) of the thin ideal and social comparison\(^{201, 206}\) are two characteristics that may be causal risk factors for the onset of BID\(^{205}\). Individuals who internalize the thin ideal endorse societal values to the point that this value becomes incorporated into their own belief system\(^{207}\). High internalizers buy into the societal norms of size (e.g., thin ideal) and appearance\(^\text{88}\) and are at greater risk for body image disturbance\(^{207}\).

The Appearance Schemas Inventory-Revised developed by Cash and Labarge\(^\text{208}\) is a 20-item, 5-point Likert scale (1=strongly disagree to 5=strongly agree) that assesses core beliefs about appearance (e.g., “What I look like is an important part of who I am.”) with two scales (i.e., Motivational Salience and Self-Evaluative Salience). Motivational Salience assesses the extent to which persons attend to their appearance and engage in appearance-management behaviors. Self-Evaluative Salience, on the other hand, assesses the extent to which individuals define or measure themselves and their self-worth by their physical appearance. Scores are calculated by summing all items for a composite score. High scores indicate high internalizers (i.e., they endorse societal values placed on the thin ideal and appearance). Mean scale scores can be calculated as well by summing
items from their respective scales. The revised version of ASI has not been measured in populations with DRCHCs but is worth exploring.

A reliable, valid, self-report tool used to assess multiple aspects of societal influence on appearance is called the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3)\textsuperscript{209}. This 30-item, 5-point Likert (i.e., “definitely disagree” to “definitely agree”) instrument contains four scales (i.e., Pressures, Information, Internalization-General, Internalization-Athlete). The Pressures scale (7 items) assesses the pressures caused by the media (e.g., I have felt pressure from TV or magazines to have a perfect body). The Information scale contains nine items that assess generic media information influence (e.g., TV commercials are an important source of information about fashion and “being attractive”). The 5-item Internalization-Athlete scale measures the impact of athletic and sports figures (e.g., I try to look like sports athletes) and the Internalization-General scale contains nine items that assess internalization of messages from the media (e.g., I compare my body to the bodies of TV and movie stars). The SATAQ-3 has good reliability and validity in young adult women\textsuperscript{209} and men\textsuperscript{210}. This instrument has not been measured in populations with DRCHCs but looks promising.

Interpersonal interactions with family members, friends, peers, and others also may influence an individual’s feelings toward his or her body\textsuperscript{184,211}. These interactions include others’ expectations, opinions, and attitudes about physical appearance\textsuperscript{189,212} as well as verbal and nonverbal communications. Teasing or appearance related feedback also may have a long-term effect on body image\textsuperscript{213}. One way to measure this is by using the Perception of Teasing Scale (POTS)\textsuperscript{214}. The POTS is an 11-item, 5-point Likert scale
(i.e., 1=never to 5=very often or 1=not upset to 5=very upset) that indexes frequency and emotional response (i.e., how upset were you?) to general weight teasing (e.g., 6 items; people made fun of you because you were heavy) and competency/abilities teasing (e.g., 5 items; people laughed at you because you did not understand something). A final score is obtained by summing the scale scores. Higher scores indicate greater past history of teasing and increased chances of BID. It is a reliable and valid instrument that is easy to administer and score. This instrument has not been measured in populations with DRCHCs but has been measured in youth and adults that are overweight and obese.

A variety of other scales assess dimensions of BID, such as subjective, affective, behavioral, perceptual, and cognitive dimensions. Some of the structured interviews described previously assess body image concerns. For example, the EDE has two scales concerned with BID (i.e., Shape Concerns and Weight Concerns).

Two BID instruments commonly used with the DRCHC population are the EDI body dissatisfaction scale and the Body Shape Questionnaire. The EDI-2 body dissatisfaction scale is a 9-item, 6-point Likert scale (i.e., 1=always, 2-usually, 3=often, 4=sometime, 5=rarely, 6=never) that assesses dissatisfaction with specific body parts (e.g., I think that my stomach is too big). Scores are calculated by summing all items. Higher scores indicate greater dissatisfaction with a total possible score range from 6 to 54. The EDI body image dissatisfaction scale has assessed BID in those with CF and DM with good reliability. It is easy to administer and can be completed by participants in minutes.

The Body Shape Questionnaire (BSQ), unlike the body dissatisfaction scale from the EDI that assesses dissatisfaction with one’s body parts, assesses BID by evaluating
one’s body shape and size concerns over the past four weeks (e.g., have you been so worried about your shape that you have been feeling you ought to diet?)\textsuperscript{215}. The score for this 34-item, 6-point Likert scale (i.e., 1=never, 2=rarely, 3=sometime, 4=often, 5=very often, 6=always) is calculated by summing all items, with higher scores indicating greater BID\textsuperscript{215}. The BSQ has been used to assess BID in subjects with DM\textsuperscript{103} and CF\textsuperscript{75} with good reliability. Other DRCHCs (i.e., celiac disease and IBS) have not used the body dissatisfaction scale from the EDI or the BSQ; however, the EDE scales (i.e., Shape Concerns and Weight Concerns) have been used.

Another BID measurement compares actual and desired body size using a Likert-scale format where answer choices could be words (e.g., agree to disagree) or figures (where body types range from very thin to very obese)\textsuperscript{217}. In figural scale assessments, individuals usually are asked to pick a figure that reflects their ideal size and one that reflects their current size. The discrepancy between the two figure sizes is used to determine the individual’s degree of body dissatisfaction. This type of measurement tool is very easy to use and correlates well with other questionnaires that measure BID\textsuperscript{189}.

**Family Environment**

How a family functions during one’s childhood and through young adulthood may have relevance towards disturbed eating\textsuperscript{218}. The Family Functioning Questionnaire (FF)\textsuperscript{219} is a 24-item, 4-point Likert (always, often, sometime, never) scale with 3 scales (Problem Solving, Communication Skills, Personal Goals) that are fundamental domains in family interventions. The Problem Solving scale assesses the six steps of structured problem solving: identify the problem, list possible alternative solutions, discuss positive
and negative aspects of each, choose the best solution, plan the solutions, and check and review the implementation and planning\textsuperscript{219}. The FF’s Communication Skill scale assesses the expression of positive and negative feeling and active listening. The Personal Goals scale assesses the capability of each family member to identify personal everyday goals. All items are summed from 0 to 3 (always, often, sometime, never) with 0 corresponding to lack of skill or negative attitude\textsuperscript{219}. This instrument is reliable and valid (convergent and construct)\textsuperscript{219} but has not been assessed in populations with DRCHCs.

The Childhood Family and Mealtime Questionnaire (CFMQ)\textsuperscript{220} instrument assesses an individual’s recollection of mealtime experiences during childhood. This is a 69-item, 5-point Likert scale (never, rarely, sometimes, usually, always) instrument with a subset of 35 items that predict bulimics and repeat dieters\textsuperscript{221}. The 35-items comprise these scales: Mealtime Communication Based Stress (11 items), Mealtime Structure (6 items), Appearance-Weight Control (6 items), Parental Mealtime Control (3 items), Emphasis on Mother’s Weight (3 items), Present Parental Meal Influences (2 items), and Traditional Family Roles (3 items). Items are scored 1, 2, 3, 4, and 5 for never, rarely, sometimes, usually, and always, respectively. Items in each scale are averaged to create a mean scale score. This is a reliable and valid instrument\textsuperscript{220, 221} in university students\textsuperscript{222}, but has not been measured in populations with DRCHCs.

**Self Esteem**

Self-esteem is considered an important part of emotional health. The more confidence and satisfaction one has for their own well-being (i.e., high self-esteem), can
lead to better overall emotional health\(^{223}\). Low self-esteem could be a risk factor for both negative body image and disturbed eating behaviors\(^{11}\). The Rosenberg Self-Esteem (RSE) is a 10-item, 4-point Likert scale (i.e., 0=strongly disagree to 3=strongly agree) that assesses one’s level of self worth (e.g., On the whole, I am satisfied with myself)\(^{224}\). Summing of all items has a score range of (0-30), with scores of 15 to 25 indicating normal self-esteem and scores below 15 indicating low self-esteem\(^{11,224}\). The RSE has assessed only cystic fibrosis patients and with good reliability\(^{72}\). It is easy to administer and score, and takes less than five minutes for participants to complete.

**Sense of Coherence**

Some people who are coping with stressful situations (e.g., diagnosis of a disease) and severe hardships stay healthy, whereas others do not. The Salutogenic Theory developed by Antonovsky\(^{225}\) posits the strength of one’s sense of coherence (SOC) is directly related to their coping skills\(^{226,227}\). Sense of coherence (SOC) is “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that 1) stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable (i.e., Comprehensibility); 2) resources are available to one to meet the demands posed by these stimuli (i.e., Manageability); and 3) these demands are challenges worthy of investment and engagement (i.e., Meaningful)\(^{225, p.19}\). In other words, SOC helps to explain how people view life and, how in stressful situations they identify and use their general resistance resources (e.g., money, knowledge, skill, self-esteem, social support) to maintain and develop their health.
SOC is measured using a 29-item, semantic differential self-report scale (i.e., 1=never have this feeling to 7=always have this feeling) measuring how people manage stressful situations and stay well. By summing all scores for each item, a total score is obtained (i.e., total possible score range 29 to 203). Higher total scores on the SOC indicate a better overall position on health. Normative data from the studies using the SOC instrument show a score range of 63 to 176 for undergraduate students. The SOC has good reliability and validity across cultures. No use of this instrument in populations with DRCHCs could be located; however, this scale could provide insights into why some individuals with DRCHCs develop disturbed eating behaviors and others do not.

**Stress and Coping**

Psychological stress is associated with disturbed eating. A recent review suggests that disturbed eating may be a manifestation, not of the stress itself, but of maladaptive coping styles. The Coping Inventory for Stressful Situations (CISS-21) developed by Endler is a 21-item, 5-point Likert scale (not at all to very much) with 3 scales (Task-Oriented [7-items], Emotion-Oriented [7-items] and Avoidance Coping [6-items]). Task-Oriented coping is purposeful efforts aimed at solving problems and cognitively restructuring/altering problems. Emotion-Oriented coping refers to emotional reactions that are self-oriented in the efforts to handle stressful situations. Avoidance Coping refers to activities and cognitive changes aimed at avoiding situations (e.g., distracting oneself). All items are scored 1 to 5 with higher scores indicating poorer
coping abilities. The CISS-21 is a valid and reliable instrument for young adults with and without chronic diseases

**Emotional Intelligence**

Emotional intelligence (EI) is an emerging factor that accounts for a range of emotional and intrapersonal phenomena. EI refers to a group of non-cognitive abilities accounting for how people accommodate and adapt to intra- and inter-personal conditions by identifying emotions, incorporating emotions in thought processes, understanding emotional complexity, and manipulating emotions in self and others. EI is associated with an individual’s ability to cope with stressful conditions, and is negatively correlated with emotional eating patterns. Thus, EI may be an important coping factor for assessing disturbed eating behavior risk factors in young adults with and without DRCHCs.

The Wong & Law Emotional Intelligence Scale (WLEIS) is a 16-item, 7-point Likert (strongly agree to strongly disagree) instrument with four scales: Self-Emotion Appraisal (i.e., ability to perceive and understand the emotions of those people around one’s self), Uses of Emotion (i.e., ability of an individual to make use of their emotions by directing them towards constructive activities and personal performance), Regulation of Emotion (i.e., ability of people to regulate their emotions), and Others’ Emotion Appraisal (i.e., ability to perceive and understand the emotions of those people around them). All items are summed for a global score with lower scores indicating higher emotional intelligence. The WLEIS is a reliable and valid instrument that is easy to
administer and score with low participant burden\textsuperscript{236}. Since this a fairly new instrument, there are yet to be studies that utilize the WLEIS in DRCHC populations.

**Self-Management**

For optimal health, all individuals need to consume a nutritious diet. For optimal disease management, individuals with DRCHCs continuously need to self-monitor and manage their conditions. The Social Cognitive Theory constructs of self-efficacy, outcome expectations, and self-regulation are important predictors of self-management\textsuperscript{175}. Patients who lack confidence (i.e., low self-efficacy) in their ability to manage their chronic health condition may be at increased risk for eating disturbances\textsuperscript{38, 237}. Outcome expectations (i.e., how one views performing a behavior in relation to its expected outcomes) also affect dietary management of diseases. For example, young adults with DRCHCs may view following their prescribed diets as a way to improve their overall health in the long term. Self-regulation, defined as the ability to control one’s behavior is achieved through self-monitoring, goal-setting, feedback, self-reward, self-instruction, and enlistment of social support\textsuperscript{223}.

The Nutrition Self-Efficacy instrument\textsuperscript{238} is a 5-item, 4-point Likert scale (1=very uncertain to 4=very uncertain) that assesses one’s confidence in the ability to follow a healthy diet (e.g., I can stick to healthful foods even if I need a long time to develop the necessary routines). Possible score range is 5 to 20 with higher scores indicating increased confidence in following a healthy diet\textsuperscript{238}. The Nutrition Self-Efficacy scale has good reliability and validity\textsuperscript{238, 239}, is easy to administer, and has low participant burden. This instrument has not assessed those with DRCHCs.
The Healthier Foods Outcomes instrument is from the Health Belief Survey\textsuperscript{240}. It is a 22-item, 5-point Likert scale (i.e., 1=strongly disagree to 5=strongly agree) that assess Outcome Expectations (i.e., positive and negative) for healthy eating. All items are summed for a mean score. This instrument is reliable and valid and has only been used in young adult populations\textsuperscript{240,241} without DRCHCs.

The Self-Regulatory Healthy Nutrition Behavior instrument is from the Health Belief Survey\textsuperscript{240}. It is a 32-item, 5-point Likert scale (i.e., 1=never, 2=seldom, 3=occasionally, 4=often, 5=repeatedly) that assess Self-Monitoring (e.g., do you keep track of how many servings of fruits and vegetable you eat each day?), Self-Instruction (e.g., do you tell yourself that fruits and vegetables are low in calories?), and Goal-Setting (e.g., do you work towards the goal of consuming more vegetables?) for healthy eating\textsuperscript{240}. The questions focus on regulating total energy, fat, fiber, fruit and vegetable intake, along with planning and tracking food intake. Items are summed for a mean total score for each construct (i.e., Self-Monitoring, Self-Instruction, and Goal-Setting). This is a reliable and valid instrument\textsuperscript{240,241} that is easy to administer and score but has not been assessed in populations without DRCHCs.

**Maturity**

Emerging adulthood, according to Arnett, is characterized by five main features: “age of identity explorations with trying out various possibilities (e.g., love and work); age of instability; most self-focused age of life; age of feeling in-between, in transition, neither adolescent nor adult; and the age of possibilities when people have an unparalleled opportunity to transform their lives”\textsuperscript{147,p.8}. Emerging young adults face
many new decisions (e.g., Where to go to college? Switch jobs? Switch apartments? Date someone new?), especially because most young adults leave the household that they were raised by age 18 years. Their parents, for the most part, were there to guide them through decision-making processes. However, as adolescents emerge (i.e., transition) into young adulthood the decision making role shifts. Young adults take on responsibility, make independent decisions, start to become financially independent and grow into maturity. Young people who need ongoing specialist care beyond adolescence must transfer to adult services, which can cause anxiety in some patients. Thus, the age and maturity when one becomes independent in self-management of his or her chronic health condition is a crucial time period that needs to be considered for disease management.

The Temperament and Character Inventory (TCI) is a 240-item, dichotomous (true/false) instrument that assesses personality traits. The TCI includes seven dimensions with four temperament scales (i.e., Novelty Seeking, Harm Avoidance, Reward Dependence, Persistence) and three character scales (i.e., Self-directedness, Cooperativeness, and Self-Transcendence). The Self-directedness and Cooperativeness scale from the TCI form a maturity index score. The Short Index Self-Directedness (SISD) is a 10-item, 5-point Likert scale (1=strongly disagree to 5=strongly agree) that assesses the Self-directedness scale of the TCI in a shorter format with good reliability and validity. Scoring for self-directed responses receive 5 points and decreases to 1 point for non-self-directed response. A global score is obtained by summing all items on the SISD and Cooperativeness scale. This instrument may be just as sufficient in assessing maturity levels as the TCI’s maturity index, but this has not been examined.
The TCI also has been assessed in some populations with DRCHCs (i.e., Type 1 diabetes\textsuperscript{244}), which may be easily adaptable to other DRCHC groups.

**Health Motivation**

Health value (i.e., the importance a person places on their health) is an important construct from the Social Learning Theory that affects one’s intentions for health behavior change\textsuperscript{245}. A greater emphasis placed on the value of one’s health, along with a high internal locus of control, increases the likelihood for one engaging in health protective behaviors\textsuperscript{245}. The Health Motivation questionnaire is a 4-item, 5-point Likert (strongly agree=5, agree=4, neither agree nor disagree=3, agree=2, strongly disagree=1) scale that assesses an individual’s Health Value (e.g., My health is the most important thing to me in my life)\textsuperscript{246}. Item scores are summed to obtain a global score. Higher scores indicate an increased value placed on one’s health, which can potentially lead to changes in health behaviors\textsuperscript{246}. The Health Motivation instrument is reliable, valid, and easy for participants to complete and for researchers to score\textsuperscript{246}. It also holds promise in assessing health value in populations with DRCHCs.

An individual’s motivation to stay healthy also can be affected by their perceived behavioral control. Locus of control (i.e., perceived behavioral control), an important aspect of personality, is an individual’s belief about whether the outcomes of an action are under his or her control or the result of external factors outside the individual’s control\textsuperscript{247}. Those with higher internal loci of control believe that they have considerable control over their health status, while those with higher external loci of control feel they have little control over their health because it is determined by luck, fate, change, or
powerful others$^{248}$. Research has shown differences in health outcomes among individuals who differ in their loci of control (i.e., internal vs. external)$^{248}$.

The Health Locus of Control Scale (HLC), 11-item, 6-point Likert scale (strongly agree to strongly disagree) was developed to assess locus of control$^{249}$. A global score is computed by summing all items. The mean score in college students on the HLC is 35.57 with standard deviation 6.22$^{249}$. Thus, those who score above the mean value would be considered “health-external” (i.e., higher external locus of control) while those below would be labeled as “health-internal” (i.e., higher internal locus of control). The HLC is a reliable instrument with concurrent validity to the Rotter’s Internal-External Scale$^{248}$. Type 1 diabetes patients also have been assessed using this instrument with good reliability$^{126}$. A revised version of the HLC is the Multidimensional Health Locus of Control (MHLC)$^{250}$ instrument. The MHLC is an 18-item, 6-point Likert scale (strongly agree to strongly disagree) with 3 scales (Internal Health Locus of Control [6-items], Powerful Other’s Health Locus of Control [6-items], Chance Health Locus of Control [6-items]). Internal Health Locus of Control refers to the extent that personal behavioral factors are responsible for one’s health or illness. Powerful Others Health Locus of Control assesses the degree in which one’s health is influenced by others (e.g., family or physicians). Chance Health Locus of Control assesses one’s belief that his or her health depends on chance, luck, or fate. A global score is computed by summing all items as in the HLC with higher scores indicating stronger endorsement of MHLC. This instrument is reliable and valid$^{250}$. 
**Alternative Diets**

Alternative diets are defined as the willful and systematic exclusion of foods typically eaten by one’s social or cultural group at large\(^{251}\). Individuals generally decide on their own, rather than under advice from health care providers, to adopt an alternative diet. Examples of common alternative diets include vegetarian (and its permutations such as fruitarian, vegan), organic, low carbohydrate, periodic fasting, as well as “self-prescribed” diets for a “self-diagnosed” condition, such as lactose-free or gluten-free diets. Adopting an alternative diet may indicate disturbed eating practices. For example, a recent study reported that current vegetarians may be at increased risk for binge eating, while former vegetarians may be at increased risk for extreme unhealthful weight-control behaviors\(^{252}\). Thus, it will be important to explore self-imposed dietary restrictions of the individuals in this study.

**Demographic Variables**

The demographic variables of importance in this study include: gender, age, ethnicity, year in school, major in college, current height and weight (used to calculate BMI), weight/fatness status as a child, age of menarche (females), voice change (males), health insurance status, and DRCHC history.
Associated Risk Factors of Eating Disorders

Certain characteristics unique to those with DRCHCs may play a role in the development of disturbed eating. The following factors (stress and coping, and illness behavior) are described in more detail below.

Stress and Coping with DRCHC Dietary Management Regimens. How an individual copes and deals with stress in dietary management of a disease may have implications for disturbed eating behaviors. The Transactional Model of Stress and Coping (TMSC) is a framework that evaluates coping with stressful events, such as diagnosis of a DRCHC. For instance, if an individual is diagnosed with a chronic health condition, he or she will evaluate the potential threats or harms (i.e., primary appraisal) and his or her ability to alter the situation and manage negative emotional reactions (i.e., secondary appraisal). Coping efforts aimed at problem management and emotional regulation will give rise to positive outcomes (e.g., psychological well-being, functional status, and adherence).

Primary appraisal is defined as the evaluation of the significance of a stressor or threatening event. Two primary appraisals found in the Health Belief Model are perceived susceptibility and perceived severity. One’s perception of the threat (i.e., susceptibility) and perceptions of severity of the threat will, according to this model, prompt efforts to cope with the stress. For example, perceptions of an event as threatening will cause distress; if an event is perceived as positive, benign, or irrelevant, little negative threat is felt.
Two other primary appraisals involve motivational relevance and casual focus of the stressor (e.g., dietary management of disease). For instance, if following a diet for disease management has a major impact on one’s goals or concerns (i.e., high motivational relevance), he or she likely will experience anxiety and situation specific distress. However, if the person perceives him- or herself as responsible for the stressor (self-causal focus), the person may be more likely to feel guilt and depression rather than anxiety.

Secondary appraisal is defined as the evaluation of the controllability of the stressor (e.g., dietary management of a condition) and a person’s coping resources\textsuperscript{253}. This involves addressing the stressor situation and includes the following: perceived ability to change the situation (e.g., perceived control over the threat), perceived ability to manage one’s emotional reactions to the threat (e.g., perceived control over feelings), and expectations about the effectiveness of one’s coping resources (e.g., coping self-efficacy). Positive associations between perceptions of control over illness and psychological adjustment have been observed across a wide variety of diseases (e.g., heart disease, cancer, HIV/AIDS)\textsuperscript{253} and also may be true for other DRCHCs.

Coping effort is defined as actual strategies used to mediate primary and secondary appraisals and has two dimensions: problem management and emotional regulation\textsuperscript{253}. Problem-focused coping (i.e., problem management) includes active coping, problem solving, and information seeking, whereas emotion-focused coping (i.e., emotional regulation) includes seeking social support, venting feelings, avoidance, and denial. Several tools have been developed to assess problem-focused and emotional-focused coping. For example, the Coping Orientations to Problems Experienced (COPE)
scale\textsuperscript{254} is a 60-item, 4-point Likert (i.e., 1=I usually don’t do this at all, 2=I usually do this a little bit, 3=I usually do this a medium amount, 4=I usually do this a lot) instrument with 15 scales that measure types of coping strategies (e.g., Active Coping, Positive Reinterpretation and Growth, Mental Disengagement, Focus on and Venting of Emotions, Use of Instrumental Social Support, Denial, Religious Coping, Humor, Behavioral Disengagement, Restraint, Use of Emotional Social Support, Substance Use, Acceptance, Suppression of Competing Activities, and Planning). A shorter version of the COPE scale is the Brief COPE\textsuperscript{255} (18-items) that contains similar scales as the COPE with one additional scale “self-blame.” The Brief COPE has been used by researchers worldwide and translated into many languages with good reliability and validity in many medical populations (e.g., HIV, cancer).\textsuperscript{256} Studies show significant associations between uses of avoidant coping (e.g., refusing to think about illness) and higher levels of psychological distress, poorer quality of life, and risky health behaviors\textsuperscript{253}.

Coping outcomes represent an individual’s adaptation to a stressor that is followed by primary and secondary appraisals and influenced by coping efforts\textsuperscript{253}. There are three types of coping outcomes: emotional well-being (e.g., denial, depression), functional status (e.g., health status), and health behaviors (e.g., seeking care and communicating with health providers). These three coping outcomes may interact with each other (e.g., depression leading to poor diabetes management). A problem or stressor can change over time, thus the outcomes that occur may have differing timeframes.

**Illness Behavior.** Abnormal illness behavior is defined by Pilowsky\textsuperscript{257} as “the persistence of an inappropriate or maladaptive mode of perceiving, evaluating, or acting
in relation to one’s own state of health despite the fact that a doctor has provided a lucid and accurate appraisal of the situation and management to be followed.” The Illness Behavior Questionnaire (IBQ) is a 62-item, dichotomous yes/no response scale that yields scores on seven scales (i.e., general hypochondriasis, disease conviction scale, psychological versus somatic focusing, affective inhibition, affective disturbance, denial, irritability) that assesses attitudes toward illness (i.e., abnormal illness behavior)\textsuperscript{258}. The IBQ also assesses patient’s feelings toward the significant persons in his or her life, including physicians, and the patient’s perceptions regarding his or her own psychosocial status\textsuperscript{258}.

The IBQ’s general hypochondriasis scale assesses the extent of fearful attitudes towards illness and provides insight into the excessive nature of the fear (e.g., If you feel ill and someone tells you that you are looking better, do you become annoyed?). The disease conviction scale assesses the strength in the belief that a somatic disorder (e.g., hypochondriasis) is present and the degree of reluctance to accept reassurance (e.g., Do you think there is something seriously wrong with your body?). The psychological versus somatic focusing scale measures psychological versus a somatic focus in perception of the disease (e.g., Do you ever think of your illness as punishment of something you have done wrong in the past?). In other words, higher scores indicate the adoption of a psychological perspective on the illness, whereas lower scores indicate a focus on somatic problems and tendency to reject the possibility of a psychological dimension to the condition. The affective disturbance scale assesses the presence of anxiety, depression, and tension (e.g., Is it hard for you to relax?). High scores on the affective inhibition scale indicate the inability for one to communicate feelings (e.g., Can
you express your personal feelings easily to others?). The denial scale measures the tendency to deny life stresses (e.g., Do you care whether or not people realize you are sick?). Higher scores on the denial scale indicate that individuals believe that a cure of physical problems will solve all life problems, while lower scores indicate individuals believe that ongoing life problems will continue even when physically well. The last scale, irritability, assesses the presence of interpersonal conflicts (e.g., Do you often find that you lose patience with other people?)

The IBQ is a reliable and valid self-report instrument and has been used in assessing abnormal illness behaviors in those with celiac disease. This instrument may be appropriate for assessing abnormal illness behaviors in other DRCHC populations.

**Demographic Variables Pertinent to those with DRCHCs.** The demographic variables that will be asked in the follow-up survey of those with DRCHCs include: age of diagnosis, access to healthcare, type of care received (e.g., regular check-up’s with RDs and physicians), and complications with disease management.

**THEORIES GUIDING THIS STUDY**

Theory guided research focusing on eating behaviors is needed to gain a better overall understanding of eating behaviors in young adults with and without DRHRCs. Several theories will inform this investigation. As described above, Gerbner’s Cultivation Theory describes the influence of media on individuals and Social Comparison Theory posits that individuals who compare themselves to idealized unrealistic body size images develop body image disturbances.
The Social Cognitive Theory (SCT), developed by Bandura\textsuperscript{259}, defines human behavior as a dynamic and reciprocal interaction of personal, behavioral, and environmental factors. As described in the Self-Management section above, constructs from this theory that may aid in identifying healthy and unhealthy concerns with diet that might lead to eating disturbances are self-efficacy, outcome expectations, and self-regulation. Social support from important referents in one’s life (e.g., family and friends) is also another important construct from the SCT that may influence behavior change\textsuperscript{223}.

**Chronic Care Model**

The chronic care model developed by Wagner and colleagues\textsuperscript{260} will be used to guide follow-up surveys with those who have DRCHCs. This model focuses on the value in improving outcomes (i.e., quality improvement management) for various chronic conditions. The key concepts in the model include the community, the health-care system and its design, support for family and self-management, and decision support networks. It is thought that patients with chronic health conditions who have a supportive network (e.g., healthcare team, friends and family) will have improved outcomes in their disease management\textsuperscript{260}, which can lead to better QOL. The healthcare system and its design is important in assuring productive interactions with patient and healthcare professionals that lead to improved clinical outcomes\textsuperscript{260}. Having a good primary care practice team that organizes and coordinates disease management with patients can make an important difference in long-term disease management outcomes\textsuperscript{260}. Thus, it would be prudent to consider the relationship of factors involved with improved disease management to eating disturbances in those with DRCHCs. Areas that should be
explored in those with DRCHCs include the care-giving style of healthcare providers (e.g., paternal/authoritarian, egalitarian [e.g., patient and healthcare giver are both involved in care plan]), relationship status with caregivers (e.g., good communication), access to healthcare, and resource availability (e.g., medications).
Chapter 3

METHODOLOGY

The Logic Model shown in Figure 1 provides an overview and long-term perspective of research related to young adults, disturbed eating, and chronic disease. The inputs include time (e.g., researcher’s and participants’ time) and money (e.g., incentives for participants, possible purchase of instruments). The outputs include development and implementation of a comprehensive online survey targeting a large sample of young adults. The outcomes also include increased healthcare awareness and information regarding disturbed eating and eating disorders in young adults with and without DRCHCs (i.e., short-term outcome), sharing findings with healthcare professionals via journal articles and/or other media sources (i.e., medium-term outcomes), and in the more distant future, decreased disturbed eating and medical complications, as well as increased quality of life for young adults with DRCHCs (i.e., long-term outcome).

The study reported here focused only on short-term outcomes. The findings of this study will be used to inform and guide future research that will lead to medium- and long-term outcomes. The goal of this study was to develop and administer surveys to comprehensively describe the demographic and psychographic characteristics and disturbed eating practices of young adults (ages 18 to 26 years) and compare the characteristics and behaviors of those with and without certain DRCHC (i.e., type 1 diabetes mellitus, celiac disease, cystic fibrosis, irritable bowel syndrome, and inflammatory bowel diseases).
Figure 2 is a timeline for this study. Data collection commenced in July 2009 when the Rutgers University Institutional Review Board granted approval. Figure 3 is the model for the research questions studied.

STUDY DESIGN

This was a cross-sectional study that involved two surveys (i.e., Eating Behavior Survey [EBS] and Follow-up Eating Behavior Survey [FEBS]). The purpose of the EBS was to use reliable and valid instruments to conduct a comprehensive assessment of the psychographic and demographic characteristics of young adults associated with disturbed eating, along with identifying participants with DRCHCs (i.e., type 1 diabetes, celiac disease, cystic fibrosis, inflammatory bowel diseases, irritable bowel syndrome). The purpose of the FEBS was to assess disease-specific characteristics related to cognitions and behaviors of participants who identified themselves in the EBS as having been diagnosed by a physician with one of the DRCHCs investigated in this study. To provide a comparison group, a subset of participants who did not have a DRCHC also were invited to complete the FEBS.

SAMPLE & RECRUITMENT

Study participants were young adults ages 18 to 26 years old. This age group was chosen because they represent a high-risk group for onset of eating disorders. The goal was to recruit 2,500 young adults without a DRCHC and approximately 50 young adults with each of the DRCHCs being studied (i.e., type 1 diabetes mellitus, cystic fibrosis, celiac disease, and irritable bowel syndrome and inflammatory bowel disease). It was anticipated that targeted recruitment to specific health organizations offering services
specifically to DRCHCs being studied and nutrition classes on college campuses that
have been observed to attract individuals with DRCHCs would yield sufficient
participants with DRCHCs for this study.

Participants were recruited from Rutgers University via verbal announcements in
classes (i.e., Introduction to Foods & Nutrition; Nutrition & Health; Health & Social
Justice; Principles of Health & Wellness; Drugs, Culture & Society; Health Program
Development; Nutrition for Today; Food & Health; Nutrition & Child; Marriage &
Family; Food & Health), word of mouth, official Rutgers student listservs, and flyers
posted in heavily trafficked areas of campus (n=200), such as residence halls, academic
buildings, dining halls, student unions, recreational facilities, bathroom stalls, student
health centers, and campus counseling centers on campus. Participants also were
recruited from the general psychology subject pool at Rutgers University via a posted
research study advertisement and from other universities (i.e., University of Florida and
East Carolina University) via announcements in classes.

The recruitment materials for the EBS (see Appendix B and C) described the
study, approximate time the survey would take to complete (30 minutes), and incentive
(chance to win 1 of 10 $25.00 cash prizes). The professors of students who were
recruited from several courses (n=8 Rutgers; n=2 East Carolina University; n=4
University of Florida) also offered participants extra credit for completing the survey.
Students from the general psychology subject pool also received research credits, which
are required for completion of Introduction to Psychology.

Type 1 diabetes, cystic fibrosis, celiac disease, inflammatory bowel diseases, and
irritable bowel syndrome have prevalence rates of 3.5, 0.4, 5.8, 0.3 to1.0, and 6.0 per
1000 individuals aged 26 years or younger\textsuperscript{36, 37, 77, 82}, respectively; thus targeted efforts were employed to recruit sufficient participants with DRCHCs. Specifically, the same recruitment materials as described above (Appendix B and C) were posted on Facebook pages (i.e., American Dietetic Association, American Diabetes Association, Cystic Fibrosis Foundation, Celiac Disease group, Diabetes Association of Rutgers University, Camp NEJEDA [New Jersey type 1 diabetes camp]), distributed on health-related listservs (i.e., Cystic Fibrosis Foundation, American Association of Diabetes Educators, Garden State Association of Diabetes Educators, and American Dietetic Association Dietetic Practice Groups [Diabetes Care & Education, Medical Nutrition Practice, Nutrition Educators of Health Professionals]), and posted on websites (i.e., IBS Self Help and Support Group and Western NY Gluten-Free Diet Support Group, Inc).

The University of Chicago’s Celiac Disease Center received internal IRB approval to recruit participants for this study as well. They posted flyers at their medical center and included a recruitment advertisement for the study in their monthly newsletter that was distributed via their own celiac disease patient listserv. Additionally, the Adult Cystic Fibrosis Clinic at Robert Wood Johnson Medical School aided in recruitment by posting flyers in their medical facility.

All of the participants who identified themselves in the EBS as having been diagnosed by a physician with a DRCHC were recruited to participate in the FEBS. A subset of the healthy participants (i.e., those with no self-report of DRCHC) were systematically (i.e., every tenth healthy participant) recruited to participate in the FEBS. Recruitment materials, sent via email (see Appendix B), described the approximate time
to complete the FEBS and offered an additional incentive of winning 1 of 10 $25.00 cash prizes.

**INSTRUMENT**

Six survey instruments were developed for this study (i.e., Eating Behavior Survey [EBS] and 5 variations of the Follow-Up Eating Behavior Survey [FEBS] that each addressed disease-specific characteristics). Thus, the variations of the FEBS were for participants who had type 1 diabetes, celiac disease, cystic fibrosis, irritable bowel syndrome/inflammatory bowel disease, and no DRCHC (i.e., healthy participants).

Development of the EBS and FEBS began with an extensive literature review to identify a comprehensive list of demographic and psychographic characteristics associated with DRCHCs and disturbed eating behaviors in children, teens, and young adults. The literature search also was conducted to identify existing valid, reliable, brief self-report measures for these characteristics and behaviors (see Chapter 2).

When more than one suitable instrument was identified for assessing a characteristic or behavior, all were reviewed to determine the instrument which was most relevant to young adults, easy to administer and score, and cost-effective. Once a single instrument was identified for each characteristic or behavior, it was reviewed to determine whether any items could be eliminated to minimize duplication and reduce survey length and participant burden. Whenever possible, published data (e.g., results of a factor analysis) were used to identify the most robust items in each instrument. When published data comparing items within an instrument were unavailable, instruments were reviewed by two research experts to identify the most salient items. When no suitable instrument could be located for a particular characteristic or behavior, one was
developed. The description of each existing questionnaire used and any changes made to shorten it, along with any items that were developed for this study are described below.

A draft of each survey was constructed and reviewed by two research experts for clarity, fluidity, grammar, and relevance to research questions. The surveys were reviewed multiple times and minor refinements (e.g., correcting spelling errors and adding a missing item) were made. During the reviews of the survey drafts, researchers noted that five of the questionnaires (i.e., Dichotomous Thinking in Eating Disorders Scale, Wong & Laws Emotional Intelligence Scale, Coping Inventory for Stressful Situations, Patient Health Questionnaire, and Generalized Anxiety Disorder) used different Likert scale answer choices (e.g., definitely false to definitely true, strongly disagree to strongly agree) but, logically, could use a single uniform set of answer choices and, thus, reduce the time needed to complete the questionnaire. A pretest was conducted using two versions of these five scales to determine whether changing the Likert scales to be similar across all the instruments would improve clarity and consistency as well as reduce participant burden while still ensuring the integrity of the measures. The first version (i.e., Version A) contained the original Likert scale choices from each of the five instruments and the second version (i.e., Version B) used similar Likert scale answer choices (i.e., two 5-point Likert scales were Never to Always; three 5-Point Likert scales were strongly disagree to strongly agree). The two survey versions were pilot-tested by 20 undergraduate students who took both versions one week apart. Analysis of the two survey versions revealed that the time needed to complete either version did not differ significantly. Paired t-tests also indicated no significant differences
between selected answers on either survey version. Thus, the original answer choices from Version A were retained.

The surveys (i.e., EBS and FEBS) were posted online (Zoomerang) for ease of data collection and convenience of participants. This data collection method has been used successfully and extensively with this study population\textsuperscript{261}. The drafts of each of the online surveys were reviewed numerous times for grammatical errors, clarity, appearance, and functionality by two or three researchers. Minor refinements in the sequential order of items and font size and color of the survey items were completed. Researchers also took the online surveys multiple times to ensure the online surveys could be completed easily without any errors in the survey software (e.g., mistakenly skipping items).

The final draft of all surveys were reviewed by a panel of five experts for contextual value of each item in an instrument, clarity, and to establish content validity of the items assessing each characteristic. The final EBS and FEBS can be found in Appendix D and E, respectively. The scoring protocol for both surveys is in Appendix F. The EBS contained 174 items and took about 25 minutes to complete. The FEBS had 129 items (celiac disease, cystic fibrosis, inflammatory bowel disease/irritable bowel syndrome), 131 items (type 1 diabetes), or 78 items (no DRCHCs) and took an average of 20 minutes to complete for those with DRCHCs and 15 minutes for those with no DRCHCs.
**Figure 1. Logic Model**

**Situation:** Young adults with a diet-related chronic health condition (DRCHC) who follow a specific dietary regimen are at increased risk for eating and body image disturbances, which can lead to disturbed eating/eating disorders.

**INPUTS**

- **Activities**
  - Survey to describe and compare the demographic and psychographic characteristics and disturbed eating practices in young adults with and without DRCHCs. An expert research panel will review the survey before and after pilot testing the instrument with ~20 young adults representative of study population.
  - Follow-up surveys with those having DRCHCs (n=250 or more; 50 from each disease and those without any DRCHC) to further examine demographic and psychographic characteristics pertinent to DRCHCs that were not assessed during the first online survey.

**OUTPUTS**

- **Activities**
  - Short
    - Healthcare professionals becoming more aware of eating disorders.
  - Medium
    - Increased knowledge and information on disturbed/disordered eating risk factors in those with DRCHCs that can inform the development of recommendations for standards of care for youth diagnosed with DRCHCs.
    - Healthcare professionals watch for signs of disturbed eating practices in youth with DRCHCs and refer patients for intervention.
    - Positive behavior changes regarding disturbed/disordered eating in youth with DRCHCs.
    - Youth with DRCHCs making better QOL decisions.

**OUTCOMES**

- **Activities**
  - Findings will be shared with other healthcare professionals via journal article and/or other media sources.

**EXTERNAL FACTORS:****

- Interpersonal factors: Peers, family and friends.
- Teasing history, quality of life, and environmental factors.

**ASSUMPTIONS:**

- All medically diagnosed individuals with a DRCHC assigned to a dietary regimen, regardless of demographics.
Figure 2. Research Timeline

<table>
<thead>
<tr>
<th>June to August 2009</th>
<th>September 2009 to May 2010</th>
<th>June 2010 to October 2010</th>
<th>November to April 2011</th>
<th>May to December 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey development and pilot testing of instrument.</td>
<td>Recruited participants to take online eating behavior survey and follow-up eating behavior surveys.</td>
<td>Analyzed data collected from both online surveys.</td>
<td>Completed writing of dissertation. Submitted abstracts for presentation at American Dietetic Association and other professional meetings Defended Dissertation and Graduate</td>
<td>Prepare manuscripts for publication.</td>
</tr>
</tbody>
</table>
Figure 3. Proposed Model For Disturbed Eating*

**DRCHC**
Type 1 Diabetes, Celiac, Cystic Fibrosis, Irritable Bowel Syndrome, & Inflammatory Bowel Diseases (Crohn’s & Ulcerative Colitis)

**Demographics**
Those that increase the likelihood of distorted eating: greater length of time diagnosed with DRCHC, early age of diagnosis, diagnosis during maturation, early or delayed puberty, gender (female), age, high BMI, & lack of access to healthcare.

**Psychological**
*Increased:*
- Depression
- Anxiety
- OCD

**Intrapersonal**
*Decreased:*
- Self-Esteem
- Health Values
- Quality of Life
- Emotional Intelligence
*Increased:*
- Dichotomous Thinking
- Stress & Coping

**Family and Social Environment**
*Increased:*
- Mealtime Communication-Based Stress
- Mealtime Structure
- Focus on Appearance Weight Control
- Emphasis on Mother’s Weight

**Body Image**
*Increased:*
- Investment in Physical Appearance
- Negative Weight Beliefs
- Media Pressures
- Weight Teasing History
- Weight Teasing Effect
- Shape & Weight Concerns

**Eating Behaviors**
*Increased:*
- Eating Concerns
- Restraint
- Night Eating
- Binge Eating
- Compensatory Behaviors
- Disinhibited Eating
- Emotional Eating

*KEY*
\{ \} indicates the 6 constructs have a relationship with Eating Behaviors.
*Characteristics in the double outlined boxes can interact with each other.
Eating Behavior Survey

The purpose of the EBS was to provide a comprehensive description of the demographic and psychographic characteristics associated with the presence of disturbed eating behaviors in young adults. This survey included three main parts: demographics, eating behaviors, and psychographic characteristics. Table 1 lists the instruments used.

Demographics. Part 1 focused on demographic characteristics, such as age, gender, ethnicity, height, weight, and health/chronic condition status.

Eating Behaviors. Part 2 of the survey assessed eating disorder risk and other eating behaviors associated with disturbed eating. The instruments used are described briefly below (see Chapter 2 for more details).

Eating Disorder Risk. Five parts of the Eating Disorder Examination Questionnaire (EDE-Q) were used: Restraint; Eating, Shape, and Weight Concerns; and the Binge Eating Disorder Module items (i.e., Binge Eating and Compensatory Behaviors). The Shape and Weight Concerns scales of the EDE-Q are discussed in the Body Image Attributes section below. The EDE-Q \textsuperscript{91} Restraint scale measures attempts to restrict food intake to influence body shape and weight for the purpose of sense of control over food intake (e.g., During the past 28 days, how many days have you tried to influence your body shape or weight by deliberately limiting the amount of food you eat?). The EDE-Q Eating Concerns scale measures preoccupation with and feelings towards eating food (e.g., During the past 28 days, how many days have you had a definite fear of losing
control over eating?). Higher Restraint and Eating Concerns scale scores indicate greater behavioral and psychological disturbed eating behaviors. The EDE-Q Binge Eating Disorder module assesses behavioral and psychological behaviors related to bulimia; specifically Binge Eating (i.e., frequency of engaging in binge eating) and compensatory behaviors (i.e., frequency of engaging in compensatory behaviors like excessive exercise, medication misuse, and self-induced vomiting). Higher scores on this module indicate more frequent binge eating and use of compensatory behaviors.

**Emotional Eating and Disinhibited Eating.** The Emotional Eating scale from the Three-Factor Eating Questionnaire \(^{173}\) assesses how emotions influence an individual’s urge to eat (e.g., When I feel lonely, I console myself by eating). The Disinhibited Eating scale from the Three-Factor Eating Questionnaire assesses uncontrolled eating behaviors (e.g., Sometimes when I start eating, I just can’t seem to stop.). The number of items on the Disinhibited Eating scale was reduced from 9 to 3 to lower participant burden. The items used in this study were those with the strongest factor loadings reported in previous research \(^{173}\). Scoring procedures were adjusted to account for the reduction in scale length (see Appendix F). Higher scores on the Emotional Eating scale indicate greater emotional eating and higher scores on the Disinhibited Eating scale indicate greater uncontrolled eating.
<table>
<thead>
<tr>
<th>Characteristic(s)</th>
<th>Theory or Theories</th>
<th>Instruments Measuring Characteristic*</th>
<th>Original Instrument Number of Items (# of Items Retained)*</th>
<th>Possible Score Range</th>
<th>Scale Type</th>
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<tr>
<td>Eating Behaviors</td>
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<tr>
<td>Eating Concerns</td>
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<tr>
<td>Restraint</td>
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<tr>
<td>Binge Eating</td>
<td>Social Cognitive Theory (SCT)</td>
<td>Eating Disorder Examination Questionnaire (EDE-Q)(^{89, 91, 92})</td>
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<td>0 to 6</td>
<td>7-point Likert</td>
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<td>Emotional Eating</td>
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<td></td>
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<tr>
<td>Disinhibited Eating</td>
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<tr>
<td>Night Eating</td>
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<td>Total Items = 28</td>
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<td>0 to 6</td>
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<td>Motivational Salience</td>
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<td>OCD</td>
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<tr>
<td><strong>Intrapersonal</strong></td>
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<td></td>
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<tr>
<td>Characteristics</td>
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<tr>
<td>Self-Esteem</td>
<td>Integrated</td>
<td>Rosenberg Self-Esteem Scale&lt;sup&gt;224&lt;/sup&gt;</td>
<td>10 (4)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
</tr>
<tr>
<td>Health Values</td>
<td>Behavioral</td>
<td>Health Motivation&lt;sup&gt;246&lt;/sup&gt;</td>
<td>4 (4)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
</tr>
<tr>
<td>Mental &amp; Physical-Health-Related QOL Stress &amp; Coping</td>
<td>Transactional Model, SCT,</td>
<td>The CDC Health-Related Quality of Life-14&lt;sup&gt;181&lt;/sup&gt;</td>
<td>14 (3)</td>
<td>0 to 30</td>
<td>1-item 5-point Likert</td>
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<tr>
<td></td>
<td></td>
<td>Coping Inventory for Stressful Situations-21&lt;sup&gt;230&lt;/sup&gt;</td>
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<tr>
<td>Stress &amp; Coping</td>
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<tr>
<td>Task-Oriented Coping</td>
<td>Model of Stress &amp; Coping,</td>
<td></td>
<td>7 (3)</td>
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<td>5-point Likert</td>
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<td>Emotion-Oriented Coping</td>
<td>Model of Stress &amp; Coping,</td>
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<td>5-point Likert</td>
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<tr>
<td>Avoidant Coping</td>
<td>Model of Stress &amp; Coping,</td>
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<td>Diet Behavior</td>
<td>Behavioral</td>
<td>Diet Behavior Scale&lt;sup&gt;215&lt;/sup&gt;</td>
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<td>1 to 5</td>
<td>5-point Likert</td>
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<tr>
<td>Emotional Eating</td>
<td>Behavioral</td>
<td>Emotional Eating Scale&lt;sup&gt;214&lt;/sup&gt;</td>
<td>4 (4)</td>
<td>1 to 4</td>
<td>4-point Likert</td>
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<tr>
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<td>Behavioral</td>
<td>Emotional Eating Scale&lt;sup&gt;214&lt;/sup&gt;</td>
<td>4 (4)</td>
<td>7 to 28</td>
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<td>Emotional Regulation</td>
<td>Emotional Regulation</td>
<td>Wong &amp; Law Emotional Intelligence Scale (WLEIS)&lt;sup&gt;236&lt;/sup&gt;</td>
<td>16 (4)</td>
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<td>Total Items = 26</td>
<td></td>
<td></td>
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<td><strong>Family &amp; Social Environment</strong></td>
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<tr>
<td>Mealtime</td>
<td>SCT</td>
<td>Childhood Family Mealtime Questionnaire (CFMQ)&lt;sup&gt;220&lt;/sup&gt;</td>
<td>11 (5)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
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<td>Communication- Based Stress</td>
<td>CFMQ</td>
<td></td>
<td>7 (3)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
</tr>
<tr>
<td>Mealtime Structure</td>
<td>CFMQ</td>
<td></td>
<td>6 (5)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
</tr>
<tr>
<td>Appearance Weight Control</td>
<td>CFMQ</td>
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<td>3 (3)</td>
<td>1 to 5</td>
<td>5-point Likert</td>
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<tr>
<td>Emphasis on Mother’s-Weight</td>
<td>CFMQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total Items = 16</td>
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</tbody>
</table>

*See Appendix F for all of the items used in these scales and scoring procedures.*
**Night Eating.** Night Eating behaviors were assessed using a questionnaire developed by Allison et al. This questionnaire was reduced from the original 14 items to the 6 items that pertain only to individuals who get up in the middle of the night (e.g., Do you have cravings or urges to eat snacks when you wake up at night?). The selected items represent the most pertinent feature of night eating syndrome (i.e., nocturnal eating). Questionnaire scoring was adjusted to account for the reduction in number of items. Higher scores indicate greater behavioral and psychological features of night eating syndrome.

**Psychographic Characteristics.** Part 3 of the survey examined the psychographic characteristics previously reported in the literature as being associated with disturbed eating. It also examined key eating behavior constructs from health behavior theories. The psychographic characteristics assessed focused on four areas: Body Image Attributes, Psychological Behaviors, Intrapersonal Behaviors, and Family and Social Environments. Below is a brief description of these measures.

**Body Image Attributes.** The body image attributes were assessed with the following instruments.

**Shape and Weight Concerns Scales.** The EDE-Q Shape Concerns scale assesses feelings towards one’s body shape and size (e.g., During the past 28 days, has your shape influenced how you think about [judge] yourself as a person?). The EDE-Q Weight Concerns scale measures feelings toward one’s weight (e.g., During the past 28 days,
how often have you had a strong desire to lose weight?). Higher scores on these scales indicate greater Shape and/or Weight Concerns.

**Physical Appearance.** The Appearance Schema Inventory-Revised (ASI-R) \(^{188}\) contains two scales (i.e., Self-Evaluative Salience and Motivational Salience). The Self-Evaluative scale measures the extent to which individuals define or measure themselves and their self-worth by their physical appearance (e.g., When I see good looking people, I wonder about how my own looks measure up.). The Motivational Salience scale measures the extent to which persons attend to their appearance and engage in appearance management behaviors (e.g., I often check my appearance in a mirror just to make sure I look okay.). The Self-Evaluative Salience scale was reduced from 12 to 8 items and the Motivational Salience scale was reduced from 8 to 4 to reduce repetition and participant burden. Higher scores on the Self-Evaluative scale indicate greater emphasis placed on measuring one’s self worth by their physical appearance. Higher scores on the shortened motivational salience scale indicate greater investment in one’s appearance.

**Weight Beliefs Scale.** This scale was developed for this study to assess an individual’s ratings of his or her weight status (i.e., very thin, thin, average, slightly heavy, and overweight) over time (i.e., about age 6, age 12, age 16, and current age). The information obtained from this instrument is pertinent to the study in determining whether weight status during childhood is associated with disturbed eating. These specific ages were selected to address the various growth stages throughout life (i.e.,
child, onset of adolescence/puberty, teenager, young adult) and be comparable to the ages used in the Perception of Teasing Scale\textsuperscript{214} and the Childhood Family Mealtimes Scale\textsuperscript{220}. The scale was reviewed beforehand by two research experts to determine contextual value and content validity.

\textit{Weight Teasing History.} Two scales from the Perception of Teasing Scale (POTS)\textsuperscript{214} were used to evaluate weight teasing history. The POTS Weight Teasing scale assesses the frequency of weight teasing when one was a child (i.e., When you were between the ages of 5 to 16, how often did people make fun of you because of your weight?) with higher scores indicating being weight teased more often. The Weight Teasing Effect scale assesses how upset (i.e., not at all upset to very upset) an individual felt after being weight teased (i.e., How upset were you?) during childhood. Higher scores indicate being more upset. The number of items retained from the POTS Weight Teasing scale and Weight Teasing Effect scale was 3 items from each scale. Items were eliminated to reduce repetition and include only items with high factor loadings\textsuperscript{214}. Scoring procedures were adjusted to account for the reduction in number of items.

\textit{Media Pressures.} The three scales of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3)\textsuperscript{209} were used to measure societal influences on body image and eating disturbances. The SATAQ Internalization-General scale assesses the influence of generic media (e.g., TV, magazines) on one’s body image. The SATAQ Pressures-Media scale measures perceived pressure from the media on one’s body image. The SATAQ Information-Media scale evaluates one’s awareness of societal appearance
norms conveyed by the media. Higher Internalization-General scale scores indicate more frequent comparisons of one’s body to the bodies of people in the media. Higher scores on the Pressures-Media scale indicate greater feelings of pressure to obtain the physical appearance standard set by the media. Higher scores on the Information-Media scale indicate greater awareness of the societal appearance norms set by the media (e.g., movies, TV, magazines). The Internalization-General scale was reduced from 9 items to 1 item that provided an indicator of this scale’s content. The Pressure-Media scale was reduced from 7 to 4 items to reduce repetition. Lastly, the Information-Media scale was reduced from 9 to 4, as some of the original items were not reflective of current media being used by young adults (e.g., music videos). Items with highest factor loadings were chosen for all SATAQ-3 scales. Scoring procedures were adjusted to reflect the reduction in scale lengths.

**Use of Body Image Intense Media.** The Body Image Intense Media scale was developed for this study to determine how frequently participants view television shows, read magazines, or access websites that have a strong focus on body image. Rather than having participants indicate the total number of hours they watch TV, read magazines or surf the net, this study examined whether the types of TV shows, magazines, and websites participants used were body image intense. This measure asks participants to indicate their two favorite TV shows, magazines, and websites. Responses were recoded as either being 1=body image intense or 0=non-body image intense based on how a focus group of young adults (n=5) categorized the TV shows, magazines, and websites named by EBS participants. Scores for this measure were computed by summing the response
scores for each type of media venue (i.e., TV, magazine, and Internet), and thus could range from 0 to 2.

**Psychological Behaviors.** The psychological behavior characteristics measured were depression, anxiety, and obsessive compulsive disorder (OCD).

*Depression.* Severity of depression was measured using the Patient Health Questionnaire-8 (PHQ-8). Higher scores indicate greater depression severity.

*Anxiety.* The General Anxiety Disorder (GAD-7) scale was used to assess anxiety severity. Higher scores indicate greater anxiety severity.

*OCD.* The Florida Obsessive Compulsive Inventory (FOCI) evaluates OCD symptoms. Participants who reported having any OCD symptoms also indicated the severity of these symptoms. Higher scores indicate greater OCD severity for only those with OCD symptoms.

**Intrapersonal Behavior Characteristics.** The intrapersonal behavior characteristics were measured with the following instruments.

*Self-Esteem.* The Rosenberg Self-Esteem scale assesses one’s self esteem (e.g., At times, I think I am no good at all), with lower scores indicating lower self-esteem. The number of items was reduced from 10 to 4 to minimize participant burden. Only items
with high factor loadings were retained and scoring procedures were adjusted to account for the reduction in number of items.

**Health Value.** The Health Motivation scale measures the importance one places on his or her individual health (e.g., My health is the most important consideration in my life). Higher scores indicate a greater importance placed on one’s health.

**Mental and Physical Health-Related Quality of Life.** The Centers for Disease Control Health-Related Quality of Life-14 contains two items that assess one’s physical and mental health over the last 30 days and one item that assesses their overall health status (i.e., My health is__; answer choices: range from poor to excellent). Only 3 of the original 14 items were used because the deleted items were beyond the scope of this study.

**Stress & Coping.** The Coping Inventory for Stressful Situations measures 3 different coping mechanisms (Task-Oriented, Emotion-Oriented, and Avoidant Coping) for dealing with stressful situations. The Task-Oriented Coping scale assesses whether task-oriented coping skills are used when dealing with a stressful situation (When faced with a stressful situation, I work to understand the situation.). The Emotion-Oriented Coping scale assesses how one copes emotionally with a stressful situation (e.g., When faced with a stressful situation, I blame myself for having gotten into the problem.). The Avoidant Coping scale assesses whether one avoids the problem when dealing with a stressful situation (e.g., When faced with a stressful situation, I spend time with a special
The seven items on each scale (Task-Oriented, Emotion-Oriented, and Avoidant Coping) were reduced to 3, 3, and 1 items, respectively, that had the highest factor loadings\(^{230}\). Scoring procedures were adjusted to account for the reduction in number of items. Higher scores on the Emotion-Oriented and Avoidant Coping scales indicate poor coping mechanisms, whereas higher scores on the Task-Oriented Coping scale indicate positive task-oriented coping skills.

**Dichotomous Thinking.** The Eating scale from the Dichotomous Thinking in Eating Disorders Scale (DTEDS)\(^{158}\) measures the presence of rigid “black and white” cognitive thinking as it relates to eating (e.g., I think of food as either “good” or “bad”). All participants answered one-item (e.g., I think of food as either “good” or “bad”), while the other three items on this scale were only answered by participants who reported dieting behaviors as these three items were not applicable to participants who were non-dieters. Higher scores on each item indicate greater dichotomous eating. The other scales (i.e., General Scale and Doubts of Action Scale) from the DTEDS were not used as they were beyond the scope of this study.

**Emotional Intelligence.** The Regulation of Emotion scale from the Wong & Law Emotional Intelligence Scale\(^{236}\) measures the ability to regulate one’s emotions (e.g., I am able to control my temper and handle difficulties rationally). Higher scores indicate a greater ability to regulate one’s emotions. The other three scales (i.e., Self-Emotion Appraisal, Uses of Emotion, and Other’s Emotion Appraisal) from this instrument were not used, as they were not relevant to this research study’s purpose.
Family and Social Environment Characteristics. Family and social environment characteristics were measured with the Childhood Family Mealtime Questionnaire (CFMQ)\(^{220}\) which assesses an individual’s recollection of mealtime experiences during childhood. The four scales are briefly described below. In cases where a scale was reduced in length, retained items were chosen based on univariate analysis\(^{220}\) and scoring procedures were adjusted to account for the reduction in number of items.

Mealtime Communication-Based Stress. This CFMQ scale assesses stress felt during mealtimes as a child (e.g., When I was young, I remember feeling nervous during dinner.). The number of items was reduced from 11 to 3 to reduce repetition and participant burden. Higher scores indicate greater communication-based stress during mealtimes as a child.

Mealtime Structure. This scale from the CFMQ recalls family mealtime pressures as a child (e.g., When I was young, I had to clean my plate.). The number of items was reduced from 7 to 3 to reduce participant burden. Higher scores indicate greater mealtime structure as a child.

Appearance Weight Control. This scale from the CFMQ recalls the importance of weight management as a child (e.g., When I was young, I remember worrying about my weight.). The number of items was reduced from 6 to 5 to reduce participant burden. Higher scores indicate greater importance placed on weight control as a child.
Emphasis on Mother’s Weight. This scale from the CFMQ recalls how one felt with respect to the emphasis placed on his or her mother’s weight as a child (e.g., When I was young, my mother worried about her weight.). Higher scores indicate greater emphasis placed on mother’s weight as a child.

Follow-Up Eating Behavior Surveys

The purpose of the five variations of the FEBS was to examine demographic and psychographic characteristics unique to those with DRCHCs that may be associated with disturbed eating behaviors. The FEBS variations were specific to each group of interest (i.e., healthy, type 1 diabetes, celiac disease, cystic fibrosis, and irritable bowel syndrome/inflammatory bowel disease participants) and are abbreviated Healthy-FEBS, Diabetes-FEBS, Celiac-FEBS, Cystic Fibrosis-FEBS, and Bowel-FEBS, respectively. Collectively, the Diabetes-FEBS, Celiac-FEBS, Cystic Fibrosis-FEBS, and Bowel-FEBS are referred to as DRCHC-FEBS. All variations of these surveys included two main parts: demographics and psychographic characteristics.

Demographics. Part 1 of the FEBS contained demographic data that was inappropriate to be collected in the EBS because the items were more disease-specific. The demographic data collected included: family history of health conditions, dietary compliance to prescribed diet, frequency and type of healthcare visits when first diagnosed and currently, age at diagnosis, communication/relationship status with healthcare professionals when first diagnosed and currently, barriers to following
healthcare professionals’ advice, DRCHC-related medical complications, knowledge and satisfaction with their current health condition, and eating disorder information received from healthcare professionals. The Healthy-FEBS contained the same demographic questions as the DRCHC-FEBS, except for some questions that were not appropriate, such as age of diagnosis and DRCHC-related medical complications. Other questions were reworded to better address the healthy participants. For example, “What was your communication/relationship status with healthcare professionals when you were younger?”; instead of, “What was your communication/relationship status with healthcare professionals when you were first diagnosed?”.

**Psychographic Characteristics.** Part 2 of the FEBS (Table 2) focused on four psychographic characteristics: Coping, Abnormal Illness Behaviors, Healthy Eating Self-Efficacy, and Quality of Life Scales. Below is a brief description of these measures.

*Coping.* The Brief COPE\(^{255}\) (i.e., Coping Orientations to Problems Experienced) instrument assesses 14 different coping mechanisms; however, only 13 of the scales were retained to reduce repetition across other measures. All variations of the FEBS included the same items from the Brief COPE. Listed below are the 13 scales included in the follow-up surveys.

*Active Coping.* This scale assesses ability to take action when experiencing a problem (e.g., I take action to try to make the situation better.). A higher score indicates greater action when experiencing a problem.
<table>
<thead>
<tr>
<th>Characteristic(s)</th>
<th>Theory or Theories</th>
<th>Instruments Measuring Characteristic*</th>
<th># of Original Instrument Item (# of items retained)*</th>
<th>Possible Score Range</th>
<th>Scale Type</th>
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<tbody>
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<td>Coping</td>
<td>Transactional Model of Stress and Coping</td>
<td>Brief Coping Orientations to Problems Experienced Scale (Brief-COPE)(^{230})</td>
<td>2 (2)</td>
<td>0 to 3</td>
<td>4-point Likert</td>
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<td></td>
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<td>2 (2)</td>
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<tr>
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<td>2 (2)</td>
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<td>4-point Likert</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>2 (1)</td>
<td>0 to 3</td>
<td>4-point Likert</td>
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<td>2 (2)</td>
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<td>0 to 3</td>
<td>4-point Likert</td>
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<td>4-point Likert</td>
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<td>2 (2)</td>
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<td>Abnormal Illness Behaviors</td>
<td>Social Cognitive Theory (SCT)</td>
<td>Illness Behavior Questionnaire (IBQ)(^{257})</td>
<td>9 (9), (9)(^{4})</td>
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<td>Dichotomous (Yes or No) responses for all Abnormal Illness scales</td>
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<td>Disease Conviction</td>
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<td>5 (5), (4)(^{4})</td>
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<td>Psychological versus-Somatic Focusing</td>
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<td>5 (5)</td>
<td>0 to 1</td>
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<td>Irritability</td>
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<td>SCT</td>
<td>The Health-Specific Nutrition Self-Efficacy(^{238})</td>
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<tr>
<td>Dyshoria/Emotional</td>
<td>Diabetes Quality of Life[101]</td>
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<td>Interference with activity of</td>
<td>Small Inflammatory Bowel Disease Questionnaire[94]</td>
<td>8</td>
<td>1 to 5</td>
<td>5-point Likert</td>
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<td>physical functioning</td>
<td>Irritable Bowel Syndrome-Quality of Life[92]</td>
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<td>1 to 5</td>
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<td>Food avoidance</td>
<td>Cystic Fibrosis Quality of Life[68]</td>
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<td>Body Image</td>
<td>Celiac Disease Questionnaire[57]</td>
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<tr>
<td>Interference</td>
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<tr>
<td>Health worry/future concern</td>
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</table>

*Total Items = 35

*See Appendix F for all of the items used in these scales and scoring procedures.

*Total number of items retained for only healthy participants taking the follow-up survey.

*Healthy participants did not complete the Quality of Life measures.
Planning. This scale assesses ability to form a plan to deal with a problem (e.g., I try to come up with a strategy about what to do.). A higher score indicates more planning when trying to deal with a problem.

Positive Reframing. This scale assesses attitude toward the problem at hand (e.g., I look for something good in what is happening). A higher score indicates greater ability to view an issue in a positive light.

Acceptance. This scale assesses ability to be accepting of a problem (e.g., I learn to live with it.). A higher score indicates that when experiencing a problem one accepts it for what it is.

Humor. This scale assesses whether an individual uses humor as a coping strategy when experiencing a problem (e.g., I make jokes about it.). A higher score indicates greater use of humor to cope.

Religion. This scale assesses whether an individual experiencing a problem uses religion as a coping strategy (e.g., I pray or meditate.). A higher score indicates more use of religion as a coping mechanism.

Emotional Support. This scale assesses whether an individual seeks emotional support from others when experiencing a problem (e.g., I get emotional support from others.). A higher score indicates greater seeking of emotional support.
**Self-Distraction.** This scale assesses whether an individual purposely self-distracts him- or herself from the problem (I turn to work or other activities to take my mind off things.). A higher score indicates greater self-distraction when experiencing a problem instead of dealing with the problem.

**Denial.** This scale measures whether an individual denies the problem he or she is experiencing (e.g., I refuse to believe that it has happened.). A higher score indicates more denial.

**Venting.** This scale measures whether an individual will vent about the problem he or she is experiencing (e.g., I express my negative feelings.). A higher score indicates more use of venting to others.

**Substance Abuse.** This scale assesses whether an individual turns to alcohol or drugs when faced with a problem (e.g., I use alcohol or other drugs to help me get through it.). A higher score indicates greater use of alcohol or drugs as a coping mechanism.

**Behavioral Disengagement.** This scale assesses whether an individual will give up when experiencing a problem (e.g., I give up trying to deal with it.). A higher score indicates greater likelihood of giving up as a means of coping.
**Self-Blame.** This scale assesses whether an individual blames him- or herself when experiencing a problem (e.g., I blame myself for things that happened.). A higher score indicates more self-blame as a means of coping.

**Abnormal Illness Behaviors.** Abnormal illness behaviors were assessed using the Illness Behavior Questionnaire (IBQ)\textsuperscript{257}. The IBQ is a 62-item, dichotomous (yes/no) response scale instrument, but only 33 items were retained as the other items were beyond the scope of this study. The items chosen also were based on discriminant validity scores of clinical and non-clinical groups\textsuperscript{263}. The Healthy-FEBS included only the 28 items applicable to healthy participants. The following scales from the IBQ were included in the FEBS.

**General Hypochondria.** The General Hypochondria scale assesses the extent of fearful attitudes towards illness and provides insight into the excessive nature of the fear (e.g., If you feel ill and someone tells you that you are looking better, do you become annoyed?). One of the 9 items from this scale was not included on the Healthy-FEBS as it was not applicable to these individuals (i.e., Are you upset by the way people react to your health condition?). A higher score indicates more fearful attitudes toward one’s illness.

**Disease Conviction.** The Disease Conviction scale assesses strength in the belief that a somatic disorder (e.g., hypochondria) is present and the degree of reluctance to accept reassurance (e.g., Do you think there is something seriously wrong with your body?). One of the 6 items from this scale was not included on the Healthy-FEBS as it was not
applicable to these individuals (i.e., Does your health condition interfere with your life a great deal?). A higher score indicates more thoughts about a somatic disorder being present and a greater degree of reluctance to accept reassurance from others.

**Total Psychological vs. Somatic Perception of Illness.** This scale measures psychological versus somatic focus in perception of the disease (e.g., Do you ever think of your illness as punishment of something you have done wrong in the past?). In other words, a higher score indicates the adoption of a psychological perspective on the illness, whereas lower scores indicate a focus on somatic problems and tendency to reject the possibility of a psychological dimension to the condition. One of the 5 items from this measure was not included on the Healthy-FEBS as it was not applicable to these individuals (i.e., Do you ever think of your current health condition as a punishment for something you have done wrong in the past?).

**Affective Inhibition.** The Affective Inhibition scale measures the inability to communicate feelings (e.g., Can you express your personal feelings easily to others?). A higher score indicates greater tendency to keep one’s feelings about the illness to oneself.

**Irritability.** The Irritability scale assesses the presence of interpersonal conflicts (e.g., Do you often find that you lose patience with other people?). One of the 5 items from this measure was not included on the Healthy-FEBS as it was not applicable to these individuals (e.g., Does your current health condition affect the way you get along with
your family or friends a great deal?). A higher score indicates greater presence of interpersonal conflicts.

*Healthy Eating Self-Efficacy.* The Health-Specific Nutrition Self-Efficacy instrument assesses one’s confidence in ability to eat healthy. All FEBS variations included this instrument. A higher score indicates greater confidence in the ability to eat healthy.

*Quality of Life.* The Quality of Life questionnaire was not included in the Healthy-FEBS because this instrument contains only disease-specific items. This 35-item, 5-point Likert instrument was developed by the researcher based on other disease-specific quality of life instruments. The developed instrument assesses one’s overall quality of life within the past few weeks. The items in each DRCHC-FEBS were modified slightly (i.e., by naming the specific DRCHC, such as type 1 diabetes or celiac disease) to make it applicable to each DRCHC. Two nutrition experts reviewed the Quality of Life items for clarity and content validity during instrument development. The Quality of Life scales are briefly described below.

*Dysphoria/Emotional.* This scale evaluates how one feels about his or her health condition (e.g., During the past few weeks, how often has your [name of DRCHC entered here] made you feel depressed?). Higher scores indicate greater emotional vulnerability.

*Interference with Activity of Physical Functioning.* This scale assesses physical ability and mobility (e.g., During the past few weeks, my [name of DRCHC entered here]
affected the time I was able to spend doing light tasks like preparing a snack or walking around.). Higher scores indicate greater interference with activities.

Food Avoidance. This scale assesses the avoidance of food due to one’s health condition (e.g., During the past few weeks, my [name of DRCHC entered here] has made me feel frustrated because I could not eat when I wanted.). Higher scores indicate greater food avoidance.

Body Image. This scale assesses one’s feelings towards his or her body weight (e.g., During the past few weeks, my [name of DRCHC entered here] has made it difficult for me to keep my weight where I’d like it to be.). Higher scores indicate negative body image.

Relationship/Social Interference. This scale assesses interpersonal relationships and enjoyment of life through socializing (e.g., During the past few weeks, I think I irritated others because of what I need to do to control my [name of DRCHC entered here].). One of the items on this scale was altered to be DRCHC specific and capture the different relationships and social interferences among these various health conditions (i.e., Diabetes-FEBS: “During the past few weeks, I have been embarrassed by having to use insulin.”; Celiac-FEBS and Bowel-FEBS: “During the past few weeks, I have been embarrassed by my need to be near a bathroom or the smell caused by my bowel problems.”; and Cystic Fibrosis-FEBS: “During the past few weeks, I have been
embarrassed by my coughing or breathlessness.”). Higher scale scores indicate greater social interferences and poorer relationships with others.

*Health Worry/Future Concerns.* This scale assesses concerns with future careers and longevity (e.g., I worry that my [name of DRCHC entered here] will limit my future career.). One of the items in this scale was altered for each of the DRCHC follow-up surveys (i.e., Diabetes-FEBS: “I worry that my blood sugar will drop and cause me to pass out.”; Celiac-FEBS & Bowel-FEBS: “I worry about losing control of my bowels.”; Cystic Fibrosis--FEBS: “I worry that I will need a heart-lung transplant.”). This item was altered for the DRCHC-FEBS in order to capture the different health worries and future concerns among these various health conditions. Higher scores indicate more health worries and future concerns.

**DATA ANALYSIS**

All data from the eating behavior and follow-up eating behavior surveys were cleaned to remove participants who did not meet eligibility criteria (i.e., 18-26 years old), duplicate entries, and participants with missing data. All analyses were conducted on PASW Statistics 17.0 SPSS. Internal consistency scores (i.e., Cronbach-α) were calculated for all eating behavior and psychographic instruments to assess reliability of the instruments.

First descriptive statistics (e.g., mean, standard deviation, range, frequency) for all participants split by gender were conducted with all demographic items, eating behavior
measures, and psychographic scales to create an overall picture of the study sample. To determine whether males differed significantly from females, t-tests were conducted.

**Research Question 1**

To determine which demographic and psychographic characteristics were associated with the presence of disturbed eating (i.e., abnormal behaviors associated with eating disorders such as restraint eating, emotional eating, disinhibited eating, night eating, binge eating, weight, shape, and eating concerns, and controlling body weight and shape through inappropriate compensatory behaviors [e.g., purging]) in young adults, individuals were categorized into disturbed eating severity categories (i.e., not disturbed, mildly disturbed, disturbed, and highly disturbed) based on their Disturbed Eating Severity score. The Disturbed Eating Severity score is a composite score developed in this study that is based on nine Eating Behavior scales (i.e., BED [i.e., Binge Eating and Inappropriate Compensatory Behaviors], Eating, Shape, and Weight Concerns, and Restraint scales from the EDE-Q; Emotional and Disinhibited Eating scales from the TFEQ; and Night Eating Questionnaire). The first step in computing the Disturbed Eating Severity score was to calculate the scores for each Eating Behavior scale using the protocol specified by their developers (see Appendix F), with the exception of the BED and Night Eating Questionnaire for which scale developers did not propose a scoring protocol. The scoring protocols for the BED and Night Eating Questionnaire were developed by the author as described below.
BED responses were scored to yield two scales: Binge Eating and Inappropriate Compensatory Behaviors. The Binge Eating score equals the number of days during the past 28 days that the participant indicated he or she binge ate. Scores could range from 0 to 28. The Inappropriate Compensatory Behavior scale included the 3 items assessing frequency during the past 28 days that the participant engaged in self-induced vomiting, medication misuse, and excessive exercise for the purpose of controlling weight and/or shape. Self-induced vomiting as a means of controlling shape or weight 4 or more times over the past 28 days is clinically significant\textsuperscript{264, 265}. Similarly, misusing medicine as a means of controlling shape or weight 4 or more times over the past 28 days is clinically significant. Excessively exercising 20 or more times over the past 28 days is clinically significant\textsuperscript{264, 265}. Each of the 3 compensatory behavior items were scored on a 7-point scale (0 to 6) based on the number of times the individual engaged in the behaviors. For the vomiting and medication misuse items, a score of 0 indicated no times of engaging in the behavior; 1 to 5 indicated 1 to 5 times, respectively, of engaging in the behavior; and 6 indicated engaging in the behavior at 6 or more times. For the excessive exercise item, 0 indicated no times of engaging in excessive exercise; scores of 1, 2, 3, 4, 5, and 6 equaled exercising excessively for 1 to 5, 6 to 10, 11 to 15, 16 to 20, 21 to 25, or more than 25 times in the past 28 days, respectively. This score range was selected because a score of 4 (4 times of vomiting and/or misusing medicine or 20 times of excessively exercising in the past 28 days) is just above the scale mid-point of 3 and also allows for assignment of higher scores reflecting more frequent occurrences (i.e., severity) of this behavior. The Inappropriate Compensatory Behavior scale score was calculated by
averaging the scores of the 3 items assessing frequency during the past 28 days that the participant engaged in self-induced vomiting, medication misuse, and excessive exercise for the purpose of controlling weight and/or shape.

The Night Eating Severity score was calculated using responses to the Night Eating Questionnaire. The scale scores could range from 0 to 30. Participants who did not report getting up in the middle of night and eating half or more of their daily food intake after suppertime were not night eaters and received a score of 0. Those who did get up in the middle of the night and ate half or more of the daily intake after suppertime received a score of 1 to 30 depending on the severity of this behavior. Behavior severity was calculated by summing the score of each of the 6, 5-point Likert type items in the Night Eating Questionnaire.

The second step in calculating the Disturbed Eating Severity score was to determine the percentiles (i.e., 75th, 90th) for the scores of each of the nine Eating Behavior scales and assign each participant a percentile ranking for each scale. Scale scores below the 75th percentile were considered “normal” and were ranked as 0. Scores from the 75th to less than the 90th percentiles were considered above normal and were ranked as 1. Scores at or above the 90th percentile were considered well above normal and were ranked as 2. Using percentile rankings permitted even weighting across the nine Eating Behavior scales.

The third step in calculating the Disturbed Eating Severity score was to sum the percentile ranking scores of the nine Eating Behavior scales (possible score range of 0 to 18) and determine the percentiles (i.e., 75th, 90th) of the summed ranking scores. The final step was to assign participants to a disturbed eating severity category (i.e., not
disturbed, mildly disturbed, disturbed, and highly disturbed). Those categorized as “not disturbed” had a summed ranking score of 0. Those categorized as “mildly disturbed” had a score above 0 and below the 75th percentile (score >0 and <5). Those categorized as “disturbed” scored at or above the 75th percentile and below the 90th percentile (score ≥5 and <10). Those categorized as “highly disturbed” scored at or above the 90th percentile (score ≥10). The cut-offs for disturbed eating severity categories were based on previous research as well as typical percentile categories used in psychological measurements (e.g., a percentile greater than 75 is considered above normal).

Descriptive statistics for each of the disturbed eating severity categories were then generated for all demographic, eating behavior measures, and psychographic instruments. Analysis of variance (ANOVA) and Student Newman Kuels post-hoc tests for continuous variables and independent sample t-tests for categorical variables were conducted to examine significant differences between disturbed eating severity groups.

Stepwise regression analysis was performed to identify significant predictors of disturbed eating severity. Stepwise regression analysis was selected because it can generate a powerful predictor model and is considered by researchers in the social sciences field to produce robust results. Independent variables that had high Pearson correlation coefficients (i.e., >0.50) with Disturbed Eating Severity score, differed significantly with disturbed eating severity (i.e., p<0.05) but were not highly intercorrelated (i.e., >0.25) with disturbed eating severity, and had a theoretical importance were entered into the model. Multicollinearity and heteroscedasticity of the model also were examined by computing the variance inflation factors and viewing
normal distribution histogram plots. Cross-validation of the predictive models was assessed as well by comparing a training and validation set of randomly assigned participants.

**Research Question 2**

To determine if young adults with DRCHCs differ from those without DRCHCs with regard to demographic and psychographic characteristics, and presence and degree of disturbed eating, it was decided *a priori* that participants would be matched (i.e., match sampling) using a 1:4 ratio (i.e., 1 case: 4 controls) based on gender and BMI. This procedure helped to control for confounding factors and strengthen the power of the study by reducing the variance of the estimated disease-exposure odds ratio$^{270}$. Matching of all cases (i.e., type 1 diabetes, celiac, cystic fibrosis, inflammatory bowel disease, irritable bowel syndrome) with control participants were done in Microsoft Excel. The far left columns of the Excel file listed all of the participants identification numbers, gender, calculated BMI and coded case-control identity (i.e., Control=0, Case=1). One additional column was labeled as “Set”. The Set column identified the grouping number for each matched control. During the process of matching participants, each case was matched and labeled (i.e., Case-Control & Set) with 4 control participants who had the same gender and a BMI within ±0.50 BMI units of each case. To assess the equality of matching, tests of significance for BMI (i.e., independent sample *t*-tests), and for gender (i.e., Fisher’s exact tests) were conducted (i.e., DRCHC [cases] vs. Healthy participants [controls]) (Appendix G). All data from Microsoft Excel were then imported into SPSS for further analysis.
Conditional logistic regression analysis (conducted in SPSS, this is done using a special form of the Cox Proportional Hazard Regression Analysis) for each demographic and psychographic variable analyzed in Research Question 1 was to determine differences between those with and without a DRCHC using a 95% confidence interval with alpha set at 0.05. Further conditional logistic regression analyses were conducted with bowel-related DRCHC, type 1 diabetes DRCHC, and cystic fibrosis DRCHC matched case-control groups as well. Conditional logistic regression was used because it is statistically more powerful than other methods\textsuperscript{271}. In addition, matching helped to control for known confounding factors (i.e., gender and BMI) and increase the power of the study by reducing the variance of the estimated disease-exposure odds ratio (OR)\textsuperscript{270}.

**Research Question 3**

Data from all DRCHC participants who completed the EBS and FEBS were further examined to determine if the presence and degree of disturbed eating symptoms in young adults with DRCHCs differed by gender, BMI, age of diagnosis, age of puberty, past and current relationships with healthcare providers, barriers to following healthcare providers’ advice, and access to health insurance, and psychographic characteristics. First descriptive statistics (e.g., mean, standard deviation, range, frequency) for all DRCHC participants split by gender were conducted with FEBS demographic items, eating behavior measures, and psychographic scales to create an overall picture of the FEBS DRCHC study sample. To determine whether males differed significantly from females, Mann-Whitney U Tests were conducted because the data were not normally distributed.
As performed in Research Question 1, descriptive statistics for each of the Disturbed Eating Severity categories were generated for FEBS demographic characteristics and FEBS psychographic instruments. Kruskal-Wallis H-Tests for continuous variables and categorical variables were conducted to examine significant differences between disturbed eating severity groups.
Chapter 4

RESULTS

The purposes of this study were to conduct a comprehensive examination of the demographic and psychographic characteristics associated with disturbed eating behaviors in young adults with and without diet-related chronic health conditions (DRCHCs) (i.e., type 1 diabetes, celiac disease, cystic fibrosis, inflammatory bowel disease, irritable bowel syndrome) and to determine how young adults with DRCHCs differ on these characteristics and the presence and degree of disturbed eating from healthy young adults. Data were collected from September 2009 to June 2010.

SAMPLE

A total of 2,730 participants with and without DRCHCs completed the Eating Behavior Survey (EBS) (see Figure 4). Participants who were not in the age range of 18 to 26 years (n=99) or who omitted key demographic information (i.e., height, weight, or gender; n=6) were eliminated from data analysis. Thus, the total EBS sample was 2,625.

Demographics

The majority of participants were female (63%) and either first or second year (64%) college undergraduate students (see Table 3). Participants were primarily White (58%) and Asian (20%). Black/African Americans and Hispanics each represented about 8 percent of participants. There were no significant differences in the percentage of female and male participants who were White versus non-White.
As shown in Table 4, participant mean age was 19.76±1.58SD years. Female participants reported menarche occurred at mean age 12.58±1.52SD years. Based on the Tanner Stages of Puberty\textsuperscript{272}, onset of puberty in females was at mean age 11.05±1.60SD years. Male participants reported voice changes occurred at mean age 13.34±1.46SD years. Based on the Tanner Stages of Puberty\textsuperscript{273}, onset of puberty in males occurred at mean age 11.77±1.50SD years.

**Body Mass Index and Weight Status**

Mean BMI was in the healthy range (Table 5). Very few EBS participants were underweight or obese/morbidly obese (Table 6). The majority of participants were at a healthy weight (68\%) and one-fifth was overweight. Significantly more females were underweight than males. Nearly three-quarters of participants reported their weight had remained stable over the past month. For the quarter who reported weight change, more than half indicated that the weight change was not intentional.

Nine out of 10 EBS participants reported being in good, very good, or excellent health, with males reporting significantly better health than females, with the mean score being 3.7 on a 5-point scale (see Table 7). Additionally, the vast majority of participants had health insurance when growing up and currently had health insurance (Table 8).
Figure 4. Eating Behavior Survey (EBS) Study Sample

<table>
<thead>
<tr>
<th>EBS Assessed for Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=2,730</td>
</tr>
</tbody>
</table>

Excluded (n=105)
- Not meeting inclusion criteria (i.e., age 18-26 years old) (n=99)
- Missing key demographic data (n=6)

Total EBS Participants (n=2,625)
Table 3. Frequencies of Eating Behavior Survey Participants’ Demographic Characteristics, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Gender</td>
<td>---</td>
<td>---</td>
<td>1666</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaskan Native</td>
<td>9</td>
<td>0.34</td>
<td>6</td>
</tr>
<tr>
<td>Asian</td>
<td>537</td>
<td>20.45</td>
<td>309</td>
</tr>
<tr>
<td>African American/Black</td>
<td>206</td>
<td>7.84</td>
<td>17</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>24</td>
<td>0.91</td>
<td>17</td>
</tr>
<tr>
<td>White</td>
<td>1515</td>
<td>57.71</td>
<td>956</td>
</tr>
<tr>
<td>Mixed/Multiracial</td>
<td>80</td>
<td>3.05</td>
<td>57</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, Hispanic</td>
<td>237</td>
<td>9.07</td>
<td>151</td>
</tr>
<tr>
<td>Black, Hispanic</td>
<td>18</td>
<td>0.69</td>
<td>13</td>
</tr>
<tr>
<td>Year in College</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>848</td>
<td>32.29</td>
<td>496</td>
</tr>
<tr>
<td>Second</td>
<td>839</td>
<td>31.95</td>
<td>575</td>
</tr>
<tr>
<td>Third</td>
<td>447</td>
<td>17.02</td>
<td>278</td>
</tr>
<tr>
<td>Fourth or more</td>
<td>439</td>
<td>16.72</td>
<td>272</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>32</td>
<td>1.22</td>
<td>28</td>
</tr>
<tr>
<td>Other</td>
<td>21</td>
<td>0.80</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 4. Eating Behavior Survey Participants’ Current Age and Age at Puberty, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean+SD</td>
<td>Range</td>
<td>Mean+SD</td>
</tr>
<tr>
<td>Age</td>
<td>19.76±1.58</td>
<td>18.00-26.00</td>
<td>19.74±1.58</td>
</tr>
<tr>
<td>Puberty Marker (age)‡</td>
<td>11.31±1.60</td>
<td>6.30-19.75</td>
<td>11.05±1.60[^a]</td>
</tr>
</tbody>
</table>

SD=Standard Deviation

[^a] Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

[^p] p<0.001

[^†] N=2589 (n=1655 females; n=934 males) because 96 participants chose not to report or were unsure.

[^‡] Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
</tr>
<tr>
<td>Body Mass Index (Wt [kg]/Ht [m²])</td>
<td>23.34±4.04</td>
<td>22.80±4.08^a</td>
<td>24.30±3.80^a</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

#Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

^ap<0.001
**Table 6. Frequencies of Eating Behavior Survey Participants’ Weight Status, Split by Gender**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Body Mass Index Category (Wt [kg]/Ht [m²])</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>160</td>
<td>6.10</td>
<td>134</td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>1774</td>
<td>67.58</td>
<td>1193</td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>519</td>
<td>19.77</td>
<td>239</td>
</tr>
<tr>
<td>Obese Category 1 (BMI 30 to &lt;35)</td>
<td>136</td>
<td>5.18</td>
<td>75</td>
</tr>
<tr>
<td>Obese Category 2 (BMI 35 to &lt;40)</td>
<td>24</td>
<td>0.91</td>
<td>17</td>
</tr>
<tr>
<td>Morbidly Obese (BMI &gt;40)</td>
<td>12</td>
<td>0.46</td>
<td>8</td>
</tr>
</tbody>
</table>

| Weight Remained Stable over Past Month      |   |       |   |       |   |       |
| (± 1 to 2 pounds of usual weight)           | 1922 | 73.22 | 1201 | 72.09 | 721 | 75.18 |

| Weight Change was Intentional*              | 202 | 44.01 | 112 | 38.10<sup>a</sup> | 90 | 54.5<sup>a</sup> |

*N=459 (n=294 females and n=165 males) for only participants who reported Weight Change as Intentional.

Numbers followed by the same lowercase superscript in a row are significantly different using independent sample *t*-tests.

<sup>a</sup>p<0.001

<sup>b</sup>p<0.05
Table 7. Mean Health Status of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Health Status (1 to 5)†</td>
<td>3.65±0.88</td>
<td>3.56±0.88</td>
<td>3.79±0.87a</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

†Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent)
Table 8. Frequencies of Eating Behavior Survey Participants’ Health Insurance Status, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Had Health Insurance When Growing Up*</td>
<td>2375</td>
<td>93.84</td>
<td>1518</td>
</tr>
<tr>
<td>Has Health Insurance Now</td>
<td>2340</td>
<td>89.07</td>
<td>1486</td>
</tr>
</tbody>
</table>

*N=2532 (n=51 females; n=42 males) because 93 participants reported they were unsure.
Health

Less than seven percent of EBS participants reported having been diagnosed with a DRCHC by a health care professional (see Table 9). However, the occurrence of having a family history of a DRCHC was about one in four, with diabetes being the most common DRCHC reported. Approximately two percent of participants, with nearly all being female (n=56 for females and n=4 for males), had been diagnosed with an eating disorder.

Bowel Habits

Close to half of EBS participants reported one or more bowel irregularities (see Table 10). Although the average number of bowel irregularities did not differ between males and females (Table 11), females were significantly more likely than males to have abdominal discomfort or pain that was relieved by having a bowel movement and abdominal discomfort or pain that led to changes in the frequency of bowel movements (Table 10).

Diet

Only about 1 in 5 EBS participants did not follow a special dietary regimen. Of those who did, the most common diets were vegetarian and lactose free (see Table 12). Interestingly, females had a greater tendency to follow a special dietary regimen than males, but this was not statistically significant.
EBS INSTRUMENT RESULTS

Cronbach’s-α internal consistency scores were computed using all EBS participants who
met eligibility requirements (n=2625). Cronbach’s-α for all EBS measurements were
good (i.e., range = 0.71 to 0.92, see Table 13).

Eating Behaviors

EBS participants’ eating behavior characteristics are described below and are also found
in Table 14.

Eating Concerns. Mean scores on the Eating Concerns scale were less than one for all
participants, which is low given that the possible score ranges up to six. Thus, on
average, participants did not have negative eating concerns. However, female
participants had significantly greater scores than male participants.

Restrained Eating. Restraint scale scores for all participants were on the low end of the
possible score range, indicating that participants were not restricting food intake. Females
had significantly higher mean scores than males.

Binge Eating. During the past 28 days, nearly one-quarter reported engaging in a binge
eating episode (i.e., eating an unusually large amount of food with a sense of loss of
control). There were no differences in frequency of this behavior between genders.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Diagnosis of a Diet-Related Chronic Health Condition by a Health Care Provider</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>21</td>
<td>0.80</td>
<td>15</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>12</td>
<td>0.46</td>
<td>5</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>34</td>
<td>1.30</td>
<td>31</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>9</td>
<td>0.34</td>
<td>8</td>
</tr>
<tr>
<td>Inflammatory Bowel Diseases</td>
<td>25</td>
<td>0.95</td>
<td>14</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>77</td>
<td>2.93</td>
<td>60</td>
</tr>
<tr>
<td><strong>Diagnosis of an Eating Disorder by a Health Care Provider</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>2.29</td>
<td>56</td>
</tr>
<tr>
<td><strong>Family History of these Health Conditions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Diet-Related Chronic Health Condition</td>
<td>586</td>
<td>22.32</td>
<td>374</td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>188</td>
<td>7.16</td>
<td>112</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>317</td>
<td>12.08</td>
<td>197</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>20</td>
<td>0.76</td>
<td>15</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>10</td>
<td>0.38</td>
<td>8</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>63</td>
<td>2.40</td>
<td>40</td>
</tr>
<tr>
<td>Ulcerative Colitis</td>
<td>30</td>
<td>1.14</td>
<td>22</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>122</td>
<td>4.64</td>
<td>81</td>
</tr>
<tr>
<td><strong>Family History with Eating Disorders</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>59</td>
<td>2.25</td>
<td>42</td>
</tr>
</tbody>
</table>

*Numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.*

<sup>a</sup><sup>p</sup><sub>&lt;0.001</sub>
Table 10. Frequencies of Eating Behavior Survey Participants’ Bowel Movement Characteristics, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that was relieved by having a bowel movement</td>
<td>1225 (46.67%)</td>
<td>871 (52.28%)</td>
<td>354 (36.91%)</td>
</tr>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that led to changes in the frequency of bowel movements</td>
<td>523 (19.92%)</td>
<td>377 (22.63%)</td>
<td>146 (15.22%)</td>
</tr>
<tr>
<td>During the past 3 months or longer appearance of bowel movements changed</td>
<td>429 (16.34%)</td>
<td>280 (16.81%)</td>
<td>149 (15.54%)</td>
</tr>
</tbody>
</table>

*Numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

\(^{a}p<0.001\)
Table 11. Mean Number of Bowel Irregularities of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625) Mean+SD*</th>
<th>Female Participants (N=1666) Mean+SD</th>
<th>Male Participants (N=959) Mean+SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
</tr>
<tr>
<td>Total # of Bowel Irregularities (0-3)</td>
<td>0.83±1.01 0-3</td>
<td>0.83±1.01 0-3</td>
<td>0.82±1.01 0-3</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Special Diet Regimen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number on a Special Diet</td>
<td>545</td>
<td>20.79</td>
<td>303</td>
</tr>
<tr>
<td>Diabetic Diet</td>
<td>30</td>
<td>1.14</td>
<td>18</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>185</td>
<td>7.04</td>
<td>133</td>
</tr>
<tr>
<td>Vegan</td>
<td>22</td>
<td>0.88</td>
<td>12</td>
</tr>
<tr>
<td>Gluten-Free</td>
<td>52</td>
<td>1.98</td>
<td>43</td>
</tr>
<tr>
<td>Lactose-Free</td>
<td>73</td>
<td>2.78</td>
<td>57</td>
</tr>
<tr>
<td>Peanut-Free</td>
<td>25</td>
<td>0.95</td>
<td>14</td>
</tr>
<tr>
<td>Calorie Counting</td>
<td>19</td>
<td>0.72</td>
<td>12</td>
</tr>
<tr>
<td>Halal</td>
<td>6</td>
<td>0.23</td>
<td>5</td>
</tr>
<tr>
<td>Kosher</td>
<td>10</td>
<td>0.38</td>
<td>6</td>
</tr>
<tr>
<td>Weight Watchers</td>
<td>6</td>
<td>0.23</td>
<td>6</td>
</tr>
<tr>
<td>No Red Meat</td>
<td>9</td>
<td>0.34</td>
<td>9</td>
</tr>
<tr>
<td>High Protein</td>
<td>10</td>
<td>0.38</td>
<td>1</td>
</tr>
<tr>
<td>Low Carbohydrate</td>
<td>6</td>
<td>0.23</td>
<td>3</td>
</tr>
<tr>
<td>Other*</td>
<td>86</td>
<td>3.27</td>
<td>47</td>
</tr>
<tr>
<td>None</td>
<td>2080</td>
<td>79.21</td>
<td>1363</td>
</tr>
</tbody>
</table>

*Other special diets reported included: avoidance of certain foods (e.g., chicken, seafood, nuts, eggs), casein free, organic, Zone diet, 50 pounds challenge, South Beach diet, high- or low calorie diets, glycemic index diet, liquid diet, P-90X diet, blood type diet, muscle building diet (i.e., high protein, high calorie) and combination of diets (e.g., low-fat and high fiber).
Table 13. Eating Behavior Survey Instruments’ Internal Consistency Scores

<table>
<thead>
<tr>
<th>Psychographic Instruments</th>
<th>Possible Score Range</th>
<th>Number of Items</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating Behavior Instrument</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Concerns (EDE-Q)</td>
<td>0-6</td>
<td>5</td>
<td>0.80</td>
</tr>
<tr>
<td>Restraint (EDE-Q)</td>
<td>0-6</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>Emotional Eating (TFEQ-18)</td>
<td>0-100</td>
<td>3</td>
<td>0.84</td>
</tr>
<tr>
<td>Disinhibited Eating (TFEQ-18)</td>
<td>0-100</td>
<td>3</td>
<td>0.74</td>
</tr>
<tr>
<td>Nighttime Eating (NEQ)</td>
<td>0-100</td>
<td>6</td>
<td>0.78</td>
</tr>
<tr>
<td><strong>Body Image Attribute Instruments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape Concerns (EDE-Q)</td>
<td>0-6</td>
<td>8</td>
<td>0.88</td>
</tr>
<tr>
<td>Weight Concerns (EDE-Q)</td>
<td>0-6</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>Self-Evaluative Salience (ASI-R)</td>
<td>1-5</td>
<td>8</td>
<td>0.85</td>
</tr>
<tr>
<td>Motivational Salience (ASI-R)</td>
<td>1-5</td>
<td>4</td>
<td>0.71</td>
</tr>
<tr>
<td>Weight Teasing History (POTS)</td>
<td>1-5</td>
<td>3</td>
<td>0.92</td>
</tr>
<tr>
<td>Weight Teasing Effect (POTS)</td>
<td>1-5</td>
<td>3</td>
<td>0.92</td>
</tr>
<tr>
<td>Pressures-Media (SATAQ-3)</td>
<td>1-5</td>
<td>4</td>
<td>0.88</td>
</tr>
<tr>
<td>Internalization-General (SATAQ-3)</td>
<td>1-5</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Information-Media (SATAQ-3)</td>
<td>1-5</td>
<td>4</td>
<td>0.87</td>
</tr>
<tr>
<td><strong>Psychological Behavior Instruments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (PHQ-9)</td>
<td>0-24</td>
<td>8</td>
<td>0.87</td>
</tr>
<tr>
<td>Anxiety (GAD-7)</td>
<td>0-21</td>
<td>7</td>
<td>0.90</td>
</tr>
<tr>
<td>OCD (FOCI)</td>
<td>0-20</td>
<td>5</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>Intrapersonal Behavior Instruments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem (RSE)</td>
<td>1-5</td>
<td>4</td>
<td>0.85</td>
</tr>
<tr>
<td>Health Value</td>
<td>1-5</td>
<td>4</td>
<td>0.60</td>
</tr>
<tr>
<td>Task-Oriented Coping (CISS-21)</td>
<td>1-5</td>
<td>3</td>
<td>0.80</td>
</tr>
<tr>
<td>Emotion-Oriented Coping (CISS-21)</td>
<td>1-5</td>
<td>3</td>
<td>0.76</td>
</tr>
<tr>
<td>Avoidant Coping (CISS-21)</td>
<td>1-5</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Dichotomous Thinking Eating Scale (DTEDS)</td>
<td>1-4</td>
<td>4</td>
<td>0.73</td>
</tr>
<tr>
<td>Regulation of Emotion (WLEIS)</td>
<td>7-28</td>
<td>4</td>
<td>0.87</td>
</tr>
<tr>
<td><strong>Family &amp; Social Environment Instruments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (CFMQ)</td>
<td>1-5</td>
<td>5</td>
<td>0.73</td>
</tr>
<tr>
<td>Mealtime Structure (CFMQ)</td>
<td>1-5</td>
<td>3</td>
<td>0.81</td>
</tr>
<tr>
<td>Appearance Weight Control (CFMQ)</td>
<td>1-5</td>
<td>5</td>
<td>0.86</td>
</tr>
<tr>
<td>Emphasis on Mother's Weight (CFMQ)</td>
<td>1-5</td>
<td>3</td>
<td>0.72</td>
</tr>
</tbody>
</table>

* Cronbach’s-α cannot be computed for 1-item scales.
#See Appendix F for all items in each scale.
Table 14. Mean Eating Behavior Scores of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625) Mean±SD* Range</th>
<th>Female Participants (N=1666) Mean±SD Range</th>
<th>Male Participants (N=959) Mean±SD Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating Disorder Examination Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Concerns (0 to 6)</td>
<td>0.72±1.01 0.00-6.00</td>
<td>0.90±1.10&lt;sup&gt;a&lt;/sup&gt; 0.00-6.00</td>
<td>0.42±0.72&lt;sup&gt;a&lt;/sup&gt; 0.00-5.60</td>
</tr>
<tr>
<td>Restraint (0 to 6)</td>
<td>1.21±1.39 0.00-6.00</td>
<td>1.35±1.44&lt;sup&gt;a&lt;/sup&gt; 0.00-6.00</td>
<td>0.97±1.27&lt;sup&gt;a&lt;/sup&gt; 0.00-6.00</td>
</tr>
<tr>
<td>Binge Eating (0 to 28)</td>
<td>1.57±4.00 0.00-28.00</td>
<td>1.66±4.09 0.00-28.00</td>
<td>1.43±3.83 0.00-28.00</td>
</tr>
<tr>
<td>Inappropriate Compensatory Behaviors Score (0 to 6)</td>
<td>0.39±0.86 0.00-6.00</td>
<td>0.37±0.85 0.00-6.00</td>
<td>0.41±0.88 0.00-6.00</td>
</tr>
<tr>
<td>Self-Induced Vomiting (0 to 6)</td>
<td>0.25±1.10 0.00-6.00</td>
<td>0.28±1.15 0.00-6.00</td>
<td>0.20±1.00 0.00-6.00</td>
</tr>
<tr>
<td>Misuse of Medicine (0 to 6)</td>
<td>0.24±1.06 0.00-6.00</td>
<td>0.24±1.06 0.00-6.00</td>
<td>0.24±1.06 0.00-6.00</td>
</tr>
<tr>
<td>Excessive Exercise (0 to 6)</td>
<td>0.67±1.34 0.00-6.00</td>
<td>0.62±1.25&lt;sup&gt;c&lt;/sup&gt; 0.00-6.00</td>
<td>0.75±1.46&lt;sup&gt;c&lt;/sup&gt; 0.00-6.00</td>
</tr>
<tr>
<td>Global EDE-Q Score (0 to 6)</td>
<td>1.40±1.24 0.00-5.75</td>
<td>1.66±1.31&lt;sup&gt;a&lt;/sup&gt; 0.00-5.75</td>
<td>0.96±0.98&lt;sup&gt;a&lt;/sup&gt; 0.00-4.88</td>
</tr>
<tr>
<td>Three-Factor Eating Questionnaire-18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>2.01±0.77 1.00-4.00</td>
<td>2.17±0.77&lt;sup&gt;a&lt;/sup&gt; 1.00-4.00</td>
<td>1.74±0.69&lt;sup&gt;a&lt;/sup&gt; 1.00-4.00</td>
</tr>
<tr>
<td>Disinhibited Eating (1 to 4)</td>
<td>2.17±0.68 1.00-4.00</td>
<td>2.18±0.68 1.00-4.00</td>
<td>2.14±0.68 1.00-4.00</td>
</tr>
<tr>
<td>Night Eating Severity (0 to 30)</td>
<td>2.05±5.24 0.00-28.00</td>
<td>1.84±4.95&lt;sup&gt;b&lt;/sup&gt; 0.00-27.00</td>
<td>2.41±5.68&lt;sup&gt;b&lt;/sup&gt; 0.00-28.00</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation
#Mean scores followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.
<sup>a</sup>p≤0.001, <sup>b</sup>p<0.01, <sup>c</sup>p=0.05
**Inappropriate Compensatory Behaviors.** This scale assesses inappropriate compensatory behaviors (i.e., self-induced vomiting, misuse of medicine, and excessive exercising) used to control weight and/or shape. Six percent of the participants reported engaging in self-induced vomiting episodes, with four percent reporting a frequency of occurrences that were clinically significant (i.e., behavior occurring ≥4 times over the past 28 days). There was no significant difference between genders with frequency of self-induced vomiting. The misuse of medicine (e.g., laxative, insulin) was reported by six percent of participants, with three percent of the sample reporting a frequency of occurrences that was clinically significant (i.e., behavior occurring ≥4 times over the past 28 days). There were no significant differences in the frequency of these behaviors between genders. Excessive exercise as a means controlling one’s weight and/or shape was reported by nearly one-third of participants, with five percent reporting a frequency of occurrences that was clinically significant (i.e., exercising excessively ≥20 times over the past 28 days). Males were significantly more likely to exercise excessively as a compensatory behavior than females.

**Emotional Eating.** All participants had moderate Emotional Eating scale scores. Females had significantly greater emotional eating mean scale scores than male participants.

**Disinhibited Eating.** Mean Disinhibited Eating scale scores were moderate. There were no significant differences between the genders on this scale.
Night Eating Severity. About 1.9 percent of participants reported night eating (i.e.,
getting up in the middle of the night to eat and consume more than half of one’s total
calories after suppertime and performing this behavior more than once a week). Males
had significantly higher night eating severity scores than females.

Body Image Attributes

EBS participant results for body image attributes are described below and are also found
in Tables 15 to 19.

Shape Concerns. As shown in Table 15, mean Shape Concerns scale scores for all
participants were on the low end of the score range. Male participants had significantly
lower mean scores than females.

Weight Concerns. Mean Weight Concerns scale scores for all participants also were on
the low end of the score range. Male participants had significantly lower weight concern
scores than female participants.

Physical Appearance. EBS participants had mean scores that were slightly above mid-
point (i.e., neither agree or disagree) on the Self-Evaluative Salience scale. Females had
significantly higher scores and thus, were somewhat more likely to base their self-worth
on their physical appearance. Motivational Salience mean scores were slightly above the
scale mid-point with females having significantly higher mean scores than males,
indicating that females placed a greater value on their appearance.
Table 15. Mean Shape and Weight Concerns, Physical Appearance, and Body Image Distortion Scores of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD* Range</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td><strong>Eating Disorder Examination Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape Concerns (0 to 6)</td>
<td>2.02±1.62 0.00-6.00</td>
<td>2.39±1.64a 0.00-6.00</td>
<td>1.38±1.36a 0.00-6.00</td>
</tr>
<tr>
<td>Weight Concerns (0 to 6)</td>
<td>1.66±1.53 0.00-6.00</td>
<td>1.99±1.61a 0.00-6.00</td>
<td>1.09±1.19a 0.00-5.40</td>
</tr>
<tr>
<td><strong>Appearance Schema Inventory-Revised</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>3.24±0.75 1.00-5.00</td>
<td>3.35±0.73a 1.00-5.00</td>
<td>3.07±0.74a 1.00-5.00</td>
</tr>
<tr>
<td>Motivational Salience (1 to 5)</td>
<td>3.62±0.70 1.00-5.00</td>
<td>3.69±0.67a 1.25-5.00</td>
<td>3.49±0.72a 1.00-5.00</td>
</tr>
<tr>
<td><strong>Body Image Distortion (-2 to 2)</strong></td>
<td>0.77±0.67 -2.00-2.00</td>
<td>0.89±0.65a -1.00-2.00</td>
<td>0.57±0.64a -2.00-2.00</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

#Mean scores followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

a p<0.001

†Defined as perceived body weight score minus actual body weight category (i.e., underweight, normal weight, overweight, obese). Means closer to zero indicate body weight is perceived accurately. Positive values indicate that individuals perceived they were heavier than they actually were whereas negative values indicate that individuals perceived they weighed less than they actually did.
**Body Image Distortion.** A comparison of actual BMI weight category (i.e., BMI<18.5, BMI 18.5-24.9, >25) to perceived current body weight (i.e., very thin/thin, average, slightly heavy/overweight) indicated that EBS participants were fairly accurate in their body weight perceptions (see Table 15). Mean scores closer to zero indicate accurate body image perception. Positive scores indicate that individuals perceived they were heavier than they actually were, whereas negative values indicate that individuals perceived they were thinner than were actually. Both males and females perceived their weights as heavier than they actually were, however, female participants were significantly more likely than males to perceive their body weight as being heavier than their actual body weight (i.e., distorted body image).

**Weight Perceptions Scale.** Most participants described their weight as a child (i.e., 1st grade) as being either very thin or thin to average, and as they aged their weight was described as being heavier (i.e., 6th grade, 10th grade, current age) (see Table 16). This same trend was seen in both males and females. Repeated measures and follow-up tests showed a significant difference in how all participants and males and females described their weight over time (see Table 17). For all participants the Mauchly’s test indicated that the assumption of sphericity had been violated, $\chi^2(5)=289.71$, $p<0.05$, therefore degrees of freedom were corrected using Huynh-Feldt correction estimates of sphericity ($\epsilon = 0.93$). The results show that there was a main effect with how participants perceived their weight over time, $F(2.79, 7312.53)= 299.76$, $p<0.001$. These results suggest that participants were significantly more likely to perceive their body weight differently over time. Follow-up pairwise comparisons with a Bonferroni adjustment for multiple
comparisons (showed significant ($p<0.001$) mean differences between all perceived weight time periods, except for $6^{th}$ and $10^{th}$ grade time periods.

For repeated measures conducted separately for male and female participants, Mauchly’s sphericity test indicated that the assumption of sphericity had been violated, $\chi^2(5)=109.78$, $p<0.05$ for males and $\chi^2(5)=188.68$, $p<0.05$ for females, therefore degrees of freedom were corrected using Huynh-Feldt correction estimates of sphericity ($\varepsilon = 0.93$). The results show that there was a main effect with how participants perceived their weight over time in males and females, $F(2.80, 2679.75)= 79.10$, $p<0.001$ and $F(2.78, 4625.30)= 241.61$, $p<0.001$, respectively. These results suggest that male and female participants were significantly more likely to perceive their body weight differently over time. Follow-up pairwise comparisons with a Bonferroni adjustment for multiple comparisons showed significant ($p<0.01$) mean differences for males between all perceived weight time periods, except for $6^{th}$ grade and current perceived weight time periods, while females show significant ($p<0.001$) mean differences between all perceived weight time periods except for $6^{th}$ and $10^{th}$ grade time periods. Thus, over time, both female and male participants perceived that their weight moved from being thin or average to average or overweight/heavy.

Further analyses were conducted to determine if there was a main effect between male and female participants (i.e., between-subjects effect) in how they described their weight overtime. Mauchly’s test indicated that the assumption of sphericity had been violated, $\chi^2(5)=285.52$, $p<0.05$, therefore degrees of freedom were corrected using Huynh-Feldt correction estimates of sphericity ($\varepsilon = 0.93$).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Weight in 1st Grade (about age 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>1350</td>
<td>51.43</td>
<td>877</td>
</tr>
<tr>
<td>Average</td>
<td>1017</td>
<td>38.74</td>
<td>647</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>258</td>
<td>9.83</td>
<td>142</td>
</tr>
<tr>
<td>Weight in 6th Grade (about age 12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>1036</td>
<td>39.47</td>
<td>683</td>
</tr>
<tr>
<td>Average</td>
<td>907</td>
<td>34.55</td>
<td>601</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>682</td>
<td>25.98</td>
<td>382</td>
</tr>
<tr>
<td>Weight in 10th Grade (about age 16)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>965</td>
<td>36.76</td>
<td>616</td>
</tr>
<tr>
<td>Average</td>
<td>1131</td>
<td>43.09</td>
<td>746</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>529</td>
<td>20.15</td>
<td>304</td>
</tr>
<tr>
<td>Current Weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>597</td>
<td>22.74</td>
<td>365</td>
</tr>
<tr>
<td>Average</td>
<td>1406</td>
<td>53.56</td>
<td>882</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>622</td>
<td>23.70</td>
<td>419</td>
</tr>
</tbody>
</table>

*Numbers followed by the same lowercase superscript in a row are significantly different using independent sample \(t\)-tests. \(a\)\(p<0.01\), \(b\)\(p<0.05\), \(c\)\(p<0.001\)
Table 17. Mean Perceptions of Body Weight Scores in Eating Behavior Survey Participants Overtime, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD* Range</td>
<td>Mean±SD* Range</td>
<td>Mean±SD* Range</td>
</tr>
<tr>
<td>Weight in 1st Grade (1 to 3)†</td>
<td>1.58±0.66₄AB</td>
<td>1.56±0.65₅₆AB</td>
<td>1.63±0.69₅₆AB</td>
</tr>
<tr>
<td>Weight in 6th Grade (1 to 3)</td>
<td>1.87±0.80₄</td>
<td>1.82±0.78₅̅</td>
<td>1.94±0.82₅̅</td>
</tr>
<tr>
<td>Weight in 10th Grade (1 to 3)</td>
<td>1.83±0.74₄</td>
<td>1.81±0.72₅</td>
<td>1.87±0.76₅</td>
</tr>
<tr>
<td>Current Weight (1 to 3)</td>
<td>2.01±0.68₄AB</td>
<td>2.03±0.69₅AB</td>
<td>1.97±0.67₅</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

#Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

aApproaching significance p=0.056, b p<0.05, c p<0.001

†Scale range is the following: 1=very thin or thin, 2=average, 3=overweight or heavy.

‡Means followed by the same uppercase superscript in a column are significantly different (p<0.01) as analyzed by repeated measures ANOVA and Bonferroni follow-up pairwise comparison test.
Results found there was a significant between-subjects effect (gender) in how males and females perceived their weight over time $F(2.79, 7318.92) = 13.98, p<0.001$.

**Weight Teasing History.** Nearly half of EBS participants reported being teased about their weight as a child, with significantly more males being weight teased than females (Table 18). The most common type of weight teasing insult was being “made fun of”, with males being significantly more likely to be “laughed at because of their weight” and “name called” (Table 19). Participants who were weight teased reported being somewhat upset after the teasing insults, with females being significantly more upset than males (see Table 18).

**Media Pressures.** Mean scores for the Pressures-Media, Internalization-General, and Information-Media scales were at the mid-point, indicating that participants neither agreed nor disagreed that they felt pressure from the media to attain the media “thin ideal” (see Table 20). However, female participants scored significantly higher on all of these scales than males, indicating that they felt more pressure to attain the media physical appearance standard, were more aware of societal appearance norms set by the media (e.g., movies, TV, magazines), and more frequently compared their bodies to those in the media.

**Use of Body Image Intense Media.** Approximately one-fifth, half, and three-quarters of participants named body image intense TV shows (e.g., America’s Next Top Model, Nip Tuck), magazines (e.g., Cosmo, GQ, People), and websites (e.g., Facebook), respectively,
as favorites (see Table 21). Significantly more females than males named body image intense media as being their favorites (see Table 22).

**Psychological Characteristics**

EBS participants split by gender results for psychological characteristics are described below and are also found in Table 23.

**Depression.** Mean Depression scores were relatively low, but female participants had significantly higher scores than male participants.

**Anxiety.** Anxiety scores were relatively low, but female participants had significantly higher scores than males.

**OCD.** Nearly half of EBS participants reported OCD-related symptoms. Of these participants, OCD severity was relatively low. Occurrences of OCD behaviors and their severity did not differ between males and females.

**Intrapersonal Behavior Characteristics**

Intrapersonal Behavior Characteristics are described below and are also found in Table 24.
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD#</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)</td>
<td>1.68±1.04</td>
<td>1.00-5.00</td>
<td>1.64±1.00†a</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)*</td>
<td>3.33±1.19</td>
<td>1.00-5.00</td>
<td>3.56±1.18b</td>
</tr>
<tr>
<td>Total Number of Types of Weight Teasing Insults (0-3)*</td>
<td>2.15±0.87</td>
<td>0-3</td>
<td>2.05±0.87b</td>
</tr>
</tbody>
</table>

*N=1201 for only those who were weight teased (n=756 females; n=445 males).

#SD=Standard Deviation

†Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

a_p<0.01; b_p<0.001
Table 19. Frequency of Types of Weight Teasing Recounted by Eating Behavior Survey Participants who Reported Having Been Weight Teased, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Participants (N=1201)</th>
<th>Female Participants (N=756)</th>
<th>Male Participants (N=445)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>1175</td>
<td>44.73</td>
<td>741</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>751</td>
<td>28.59</td>
<td>441</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>661</td>
<td>25.16</td>
<td>372</td>
</tr>
</tbody>
</table>

*Numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests. *p*<0.01; *p*<0.001
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD* Range</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>3.09±1.06 1.00-5.00</td>
<td>3.39±1.02$^a$ 1.00-5.00</td>
<td>2.57±0.91$^a$ 1.00-5.00</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>3.01±1.22 1.00-5.00</td>
<td>3.22±1.19$^a$ 1.00-5.00</td>
<td>2.65±1.19$^a$ 1.00-5.00</td>
</tr>
<tr>
<td>Information-Media (1 to 5)</td>
<td>2.91±0.93 1.00-5.00</td>
<td>3.05±0.92$^a$ 1.00-5.00</td>
<td>2.67±0.91$^a$ 1.00-5.00</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

#Means and numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

$^a$p<0.001
<table>
<thead>
<tr>
<th>Favorite Body Image Intense Media</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Number of Favorite TV Programs that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>483</td>
<td>18.40</td>
<td>422&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>81</td>
<td>3.09</td>
<td>78&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Number of Favorite Magazines that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>777</td>
<td>29.60</td>
<td>567&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>668</td>
<td>25.45</td>
<td>602&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Number of Favorite Websites that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>1845</td>
<td>70.29</td>
<td>1272&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>188</td>
<td>7.16</td>
<td>136&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*Numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests. 
<sup>a</sup>p<0.001; <sup>b</sup>p<0.01
Table 22. Mean Body Image Intense Media Viewing Scores for Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Favorite Body Image Intense Media</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD* Range</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td><strong>Body Image Intense TV Viewing (0 to 2)</strong></td>
<td>0.25±0.50 0.00-2.00</td>
<td>0.35±0.57较a 0.00-2.00</td>
<td>0.07±0.27较a 0.00-2.00</td>
</tr>
<tr>
<td><strong>Body Image Intense Magazine Viewing (0 to 2)</strong></td>
<td>0.81±0.82 0.00-2.00</td>
<td>1.06±0.81较a 0.00-2.00</td>
<td>0.36±0.61较a 0.00-2.00</td>
</tr>
<tr>
<td><strong>Body Image Intense Website Viewing (0 to 2)</strong></td>
<td>0.85±0.52 0.00-2.00</td>
<td>0.93±0.48较a 0.00-2.00</td>
<td>0.71±0.56较a 0.00-2.00</td>
</tr>
<tr>
<td><strong>Total Body Image Intense Media Score (0 to 6)</strong></td>
<td>1.90±1.29 0.00-6.00</td>
<td>2.34±1.27较a 0.00-6.00</td>
<td>1.14±0.93较a 0.00-5.00</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

Means and numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

较a p<0.001
## Table 23. Mean Psychological Characteristic Scores of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean+SD# Range</td>
<td>Mean+SD Range</td>
<td>Mean+SD Range</td>
</tr>
<tr>
<td><strong>Patient Health Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td>5.78±4.91 0.00-24.00</td>
<td>6.11±4.97(^{\text{a}}) 0.00-24.00</td>
<td>5.201±4.77(^{\text{a}}) 0.00-24.00</td>
</tr>
<tr>
<td><strong>Generalized Anxiety Disorder</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (0 to 21)</td>
<td>5.72±4.89 0.00-21.00</td>
<td>6.25±4.99(^{\text{a}}) 0.00-21.00</td>
<td>4.79±4.57(^{\text{a}}) 0.00-21.00</td>
</tr>
<tr>
<td><strong>Florida Obsessive Compulsive Inventory (FOCI)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder Severity (0 to 20)</td>
<td>5.56±3.40 0.00-20.00</td>
<td>5.69±3.40 0.00-20.00</td>
<td>5.31±3.39 0.00-17.00</td>
</tr>
</tbody>
</table>

*\(^{\text{a}}\)P<0.001

*N=1231 (n=824 female; n=407 male) for only participants who reported OCD type behaviors.

#SD=Standard Deviation

†Means followed by the same lowercase superscript in a row are significantly different using independent sample \(t\)-tests.
### Table 24. Mean Intrapersonal Behavior Characteristic Scores of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD#</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem (1 to 5)</td>
<td>2.29±0.90</td>
<td>1.00-5.00</td>
<td>2.36±0.89*</td>
</tr>
<tr>
<td>Health Value (1 to 5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.24±0.70</td>
<td>1.00-5.00</td>
<td>3.31±0.70a</td>
</tr>
<tr>
<td>Centers for Disease Control-Quality of Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentally Unhealthy Days (0 to 30)</td>
<td>6.21±8.20†A</td>
<td>0.00-30.00</td>
<td>7.05±8.57bA</td>
</tr>
<tr>
<td>Physically Unhealthy Days (0 to 30)</td>
<td>3.32±5.77A</td>
<td>0.00-30.00</td>
<td>3.56±5.86aA</td>
</tr>
<tr>
<td>Coping Inventory for Stressful Situations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task-Oriented Coping (1 to 5)</td>
<td>3.95±0.72</td>
<td>1.00-5.00</td>
<td>3.95±0.71</td>
</tr>
<tr>
<td>Emotion-Oriented Coping (1 to 5)</td>
<td>2.82±0.98</td>
<td>1.00-5.00</td>
<td>2.90±0.99a</td>
</tr>
<tr>
<td>Avoidant Coping (1 to 5)</td>
<td>3.22±1.31</td>
<td>1.00-5.00</td>
<td>3.42±1.30a</td>
</tr>
<tr>
<td>Dichotomous Thinking in Eating Disorders Scale*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichotomous Eating Scale (1 to 4)</td>
<td>2.88±0.61</td>
<td>0.50-4.00</td>
<td>2.95±0.59a</td>
</tr>
<tr>
<td>Wong &amp; Law Emotional Intelligence Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation of Emotion (7 to 28)</td>
<td>20.49±4.46</td>
<td>7.00-28.00</td>
<td>20.11±4.42a</td>
</tr>
</tbody>
</table>

*N=989 (n=707 female; n=282 male) for only participants who reported dieting.

#SD=Standard Deviation

†Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

a<0.001; b<0.01

‡Means followed by the same uppercase script in a column are significantly different using paired sample t-tests.

A<0.001
**Self-Esteem.** Mean Self-esteem scores were in the middle of the score range (1 to 5), with higher scores indicating lower self-esteem. Most participants had moderate self-esteem levels. Females had significantly lower self-esteem levels than males.

**Health Value.** Most EBS participants were neutral to slightly positive with regard to the importance they placed on their overall health. Females valued health significantly more than males.

**Quality of Life.** The number of mentally unhealthy days (i.e., includes stress, depression, and problems with emotions) within the last month reported by EBS participants was almost an entire week. Female participants reported significantly more mentally unhealthy days than male participants. The number of physically unhealthy days (i.e., includes physical injuries and illness) within the last month reported by all participants was significantly lower than the total number of mentally unfit days, with female participants reporting significantly more physically unhealthy days than males. Thus, female participants reported a significantly poorer quality of life.

**Stress & Coping.** EBS participants had high mean Task-Oriented Coping scores indicating that they possessed positive coping skills. However, mean scores for negative coping methods (e.g., Emotion-Oriented and Avoidant) were in the middle of the possible score range (1 to 5) with females having significantly higher scores than males on both of these scales.
**Dichotomous Thinking.** Less than half of EBS participants (38%) reported dieting, with significantly more females dieting (71%) than males (29%). Those who did report dieting (n=989) had significantly ($t$-value=108.65, df=2623, p<0.001) higher mean Dichotomous Thinking scores (i.e., presence of rigid “black and white” cognitive thinking about eating) than those who did not diet. In addition, females had significantly higher mean scores than male participants.

**Emotional Intelligence.** EBS participants had high mean Regulation of Emotion scores indicating they felt they were able to regulate their own emotions. Males had significantly higher scores than females.

**Family and Social Environment Characteristics**

Family and Social Environment Characteristics are described below and are also found in Table 25.

**Mealtime Communication-Based Stress.** EBS participants had low mean Mealtime Communication-Based Stress scale scores, indicating that, as a child, participants did not feel much communication stress during mealtimes. Males had significantly higherMealtime Communication-Based Stress than females.

**Mealtime Structure.** Most EBS participants reported sometimes feeling pressure during meals as a child (e.g., When I was young, I had to clean my plate). Males had significantly higher Mealtime Structure mean scores than females.
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD*</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Childhood Family Mealtime Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.67±0.63</td>
<td>1.00-4.60</td>
<td>1.63±0.63a</td>
</tr>
<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>3.29±1.06</td>
<td>1.00-5.00</td>
<td>3.20±1.10a</td>
</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>1.98±0.92</td>
<td>1.00-5.00</td>
<td>2.05±0.97a</td>
</tr>
<tr>
<td>Emphasis on Mother’s Weight (1 to 5)</td>
<td>2.01±0.88</td>
<td>1.00-5.00</td>
<td>2.04±0.91</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation

#Means followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

ap<0.001
**Appearance Weight Control.** EBS participants did not worry about their weight during childhood (e.g., When I was young, I remember worrying about my weight), indicating that weight control pressures from the family were low. However, females had significantly higher mean Appearance Weight Control scores than males.

**Emphasis on Mother’s Weight.** EBS participants indicated that when they were children, they did not feel much pressure was placed on their mothers’ to achieve a lower weight (e.g., When I was young, my mother worried about her weight). This scale score did not differ between males and females.

**DISTURBED EATING SEVERITY**

The purpose of the Disturbed Eating Severity score is to provide a summary of how severely disturbed participants’ eating behaviors and weight and shape concerns were. This score takes into account behaviors typically used to assess eating disorders as well as other behaviors not considered in scales used to assess the presence of eating disorders (e.g., EDI\(^{107,128}\) and EAT-26\(^{122}\)), such as night eating, emotional eating, and disinhibited eating. These additional scales were included because these types of behaviors may have important significance in overall eating habits and psychological behaviors of young adults and are often identified as precursors to eating disorders\(^{274,275}\).

As described in Chapter 3, the Disturbed Eating Severity score was based on scores at the 75\(^{th}\) and 90\(^{th}\) percentiles for each of the nine scales comprising this measure (Table 26). Table 26 shows scores at the 75\(^{th}\) and 90\(^{th}\) percentile for each of the nine scales used to create the Disturbed Eating Severity ranking score. In brief, the 9 scales’
scores $<75^{th}$, $\geq 75^{th}$ to $<90^{th}$, and $\geq 90^{th}$ percentiles were scored as 0, 1, and 2, respectively. Then, the sum of the 9 scale score rankings (possible range=0 to 18) was used to assign a disturbed eating category based on percentiles of the summed ranking score. Those categorized as “non-disturbed” had a summed ranking score of 0. Those categorized as “mildly disturbed” had a summed ranking score above 0 and below the $75^{th}$ percentile (score $>0$ and $<5$). Those categorized as “disturbed” had a summed ranking score at or above the $75^{th}$ percentile and below the $90^{th}$ percentile (score $\geq 5$ and $<10$). Those categorized as “highly disturbed” had a summed ranking score at or above the $90^{th}$ percentile (score $\geq 10$).

As shown in Table 27, mean Disturbed Eating Severity scale scores were near the bottom of the range of possible scores. Females’ scores were significantly higher than males. Table 28 displays the number of males and females in each disturbed eating category. Significantly more males were in the non-disturbed category than females whereas significantly more females were highly disturbed eaters than males.
Table 26. Percentiles of Scales used to Derive the Disturbed Eating Severity Score

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>75th Percentile</th>
<th>90th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating Disorder Examination Questionnaire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binge Eating (0 to 28)</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Restraint (0 to 6)</td>
<td>2.00</td>
<td>3.20</td>
</tr>
<tr>
<td>Eating Concerns (0 to 6)</td>
<td>1.00</td>
<td>2.20</td>
</tr>
<tr>
<td>Shape Concerns (0 to 6)</td>
<td>3.13</td>
<td>4.50</td>
</tr>
<tr>
<td>Weight Concerns (0 to 6)</td>
<td>2.60</td>
<td>4.00</td>
</tr>
<tr>
<td>Compensatory Behaviors Score (0 to 6)</td>
<td>0.33</td>
<td>1.33</td>
</tr>
<tr>
<td><strong>Three-Factor Eating Questionnaire-18</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>2.67</td>
<td>3.00</td>
</tr>
<tr>
<td>Disinhibited Eating (1 to 4)</td>
<td>2.67</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Night Eating Severity (0 to 30)</strong></td>
<td>&gt;0.00*</td>
<td>11.00</td>
</tr>
<tr>
<td><strong>Disturbed Eating Severity Score (0 to 18)</strong></td>
<td>5.00</td>
<td>10.00</td>
</tr>
</tbody>
</table>

*Night Eating Severity scores >0 occurred at the 85.5th percentile. Thus, in the case of this scale, a score of 1 was assigned for scores between the 85.5th and <90th percentile.
### Table 27. Mean Disturbed Eating Severity Scores of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD*</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Disturbed Eating Severity Score (0 to 18)</td>
<td>3.46±3.84</td>
<td>3.98±4.08(^a)</td>
<td>2.57±3.21(^a)</td>
</tr>
<tr>
<td></td>
<td>0.00-17.00</td>
<td>0.00-17.00</td>
<td>0.00-17.00</td>
</tr>
</tbody>
</table>

*SD=Standard Deviation  
\(^a\)Means followed by the same lowercase superscript in a row are significantly different using independent sample \(t\)-tests.  
\(^a\)p<0.001
Table 28. Frequencies of Disturbed Eating Severity Categories of Eating Behavior Survey Participants, Split by Gender

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Category*</th>
<th>All Participants (N=2625)</th>
<th>Female Participants (N=1666)</th>
<th>Male Participants (N=959)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>747</td>
<td>28.46</td>
<td>421</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>1083</td>
<td>41.26</td>
<td>652</td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>528</td>
<td>20.11</td>
<td>378</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>267</td>
<td>10.17</td>
<td>215</td>
</tr>
</tbody>
</table>

*Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th≤D<90th percentile, HD≥90th percentile).

^Numbers followed by the same lowercase superscript in a row are significantly different using independent sample t-tests.

^a p<0.05, ^b p<0.01
**Eating Behaviors and Disturbed Eating Severity**

The eating behaviors of all EBS participants categorized by disturbed eating severity (i.e., non-disturbed (ND), mildly disturbed (MD), disturbed (D) and highly disturbed (HD)) are shown in Table 29. ANOVA revealed that the main effect for each scale comprising the Disturbed Eating Severity scale was significantly different among disturbed eating severity categories. Post-hoc analyses indicated all pairs of disturbed eating severity categories (i.e., ND and MD, ND and D, ND and HD, MD and D, MD and HD, and D and HD) were significantly different, with scale scores increasing as severity category increased. Significant differences were similar when examining just females (Table 30) and males (Table 31). However, Binge Eating for female participants was not significantly different between ND and MD groups.

**Demographic Characteristics by Disturbed Eating Severity**

Demographic characteristics of female and male participants split by disturbed eating severity are shown in Tables 32 to 45. ANOVA revealed significant main effects among disturbed eating categories on only a few demographic measurements, and post-hoc analyses indicated that all or most pairs of disturbed eating severity tended to differ significantly. Thus, as shown in Tables 33 to 34 for females and Tables 40 to 41 for males, BMI differed significantly among disturbed eating categories, with BMI increasing as disturbed eating severity rose. Results for both male and female participants show that Current Health Status was significantly lower and the number of participants following a Specific Dietary Regimen was significantly higher (Tables 38 and 45) in those who were more disturbed eaters. Additionally, the number of female
participants diagnosed with an eating disorder (Table 36) and age of males at puberty (Table 39) increased significantly as disturbed eating severity increased.
The image contains a table with numerical data and some text. The table appears to be related to psychological or behavioral assessments, possibly involving mean scores or other statistical measures. The text and table are not clearly legible due to the image quality, but it seems to be discussing some form of variance or distribution in behavioral or psychological traits.

### Table: Mean Disturbed Ealing Severity Scale Scores of All Ealing Behavior Participants, Split by Disturbed Ealing

<table>
<thead>
<tr>
<th>Severity</th>
<th>Variance</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (N=7)</td>
<td>0.00</td>
<td>0.00-0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Moderate+ (N=7)</td>
<td>1.00</td>
<td>0.00-1.00</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Severe (N=7)</td>
<td>2.00</td>
<td>1.00-2.00</td>
<td>1.50</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**Note:** The table data seems to be formatted in a way that might require manual transcription for complete accuracy.
Table 30. Mean Disturbed Eating Severity Scale Scores of Eating Behaviors Survey Female Participants, Split by Disturbed Eating Severity Level.

<table>
<thead>
<tr>
<th>Eating Severity</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbed Eating Severity Score (0 to 10)</td>
<td>10.04</td>
<td>8.82</td>
<td>6.92</td>
</tr>
<tr>
<td>Disturbed Eating (10 to 14)</td>
<td>12.19</td>
<td>10.02</td>
<td>8.86</td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>1.83</td>
<td>1.66</td>
<td>1.53</td>
</tr>
<tr>
<td>Impulse Control Questionnaire (0 to 5)</td>
<td>2.04</td>
<td>1.92</td>
<td>1.81</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>3.02</td>
<td>2.90</td>
<td>2.80</td>
</tr>
<tr>
<td>Perfectionism (0 to 10)</td>
<td>0.94</td>
<td>0.86</td>
<td>0.77</td>
</tr>
<tr>
<td>Self-consciousness (0 to 10)</td>
<td>1.32</td>
<td>1.20</td>
<td>1.11</td>
</tr>
<tr>
<td>Self-esteem (0 to 10)</td>
<td>3.64</td>
<td>3.52</td>
<td>3.43</td>
</tr>
<tr>
<td>Disturbed Eating (10 to 14)</td>
<td>12.19</td>
<td>10.02</td>
<td>8.86</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>2.04</td>
<td>1.92</td>
<td>1.81</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>3.02</td>
<td>2.90</td>
<td>2.80</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>0.94</td>
<td>0.86</td>
<td>0.77</td>
</tr>
</tbody>
</table>

Note: Possible score range (0 to 215).
Table 3. Mean Disturbed Emotion Severity Scale Scores of Emotion Behavior Survey While Participating in Sports by Disturbed Emotion Severity

<table>
<thead>
<tr>
<th>Disturbed Emotion Severity</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Disinhibition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Disinhibition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Disinhibition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: SD = Standard Deviation; N = Sample Size.
Psychographic Characteristics and Disturbed Eating Severity

Psychographic characteristics of all EBS participants by disturbed eating severity are shown in Tables 46 to 49. ANOVA revealed significant main effects among disturbed eating categories on nearly all psychographic measurements and post-hoc analyses indicated that all or most pairs of disturbed eating severity categories tended to differ significantly. Thus, as shown in Table 46, Self-Evaluative and Motivational Salience, Weight Teasing History and Effect (see also Table 47), Sociocultural Attitudes Towards Appearance, Body Image Intense TV and Magazine Viewing (see also Table 48), Depression, Anxiety, OCD, Unhealthy Days, Emotion-Oriented Coping, Dichotomous Thinking, Body Image Distortion, Mealtime Communication-Based Stress, Appearance Weight Control, and Emphasis on Mother’s Weight as a Child scores increased significantly as disturbed eating became more severe.

On the other hand, Self-Esteem, Health Value, Task-Oriented Coping, and Regulation of Emotion scores decreased as disturbed eating severity increased. Interestingly, Table 49 shows that participants who perceived their weight status as being slightly heavy or overweight at specific time points (1st grade, 6th grade, 10th grade, currently) (Figure 6) had significantly greater disturbed eating severity. This same trend across disturbed eating severity categories was not consistent for participants perceiving their weight status as being Very Thin/Thin or Average at these same time points (Figures 7 and 8).

To determine whether differences in disturbed eating categories varied by gender, female and male participants were analyzed separately. The findings for both males and females were similar to the findings for the overall group (see Tables 50 to 57).
Exceptions for males included no significant differences in Health Value among disturbed eating categories and fewer significant changes in Weight Teasing Effect (i.e., upset level after being weight teased) among disturbed eating categories.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=421)†</th>
<th>MD* (652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F#</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.90±1.71</td>
<td>18.00-26.00</td>
<td>19.74±1.52</td>
<td>18.00-26.00</td>
<td>19.77±1.52</td>
<td>18.00-26.00</td>
</tr>
<tr>
<td>Puberty Marker‡</td>
<td>11.02±1.54</td>
<td>6.30-16.75</td>
<td>11.06±1.55</td>
<td>6.30-16.75</td>
<td>10.98±1.72</td>
<td>6.30-17.30</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

ANOVA was conducted.

†Except for Puberty Marker for those that chose not to report or were unsure (N=419 for ND, N=646 for MD, N=376 for D, N=214 for HD).

‡Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years.
Table 33. Frequencies of Eating Behavior Survey Female Participants’ Weight Status, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=421)</th>
<th>MD* (652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Body Mass Index Category (Wt [kg]/Ht [m²])</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>56</td>
<td>13.30</td>
<td>53</td>
<td>8.13</td>
<td>19</td>
<td>5.03</td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>309</td>
<td>73.40</td>
<td>483</td>
<td>74.08</td>
<td>260</td>
<td>68.78</td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>47</td>
<td>11.16</td>
<td>88</td>
<td>13.50</td>
<td>60</td>
<td>15.87</td>
</tr>
<tr>
<td>Obese Category 1 (BMI 30 to &lt;35)</td>
<td>6</td>
<td>1.43</td>
<td>25</td>
<td>3.83</td>
<td>30</td>
<td>7.94</td>
</tr>
<tr>
<td>Obese Category 2 (BMI 35 to &lt;40)</td>
<td>2</td>
<td>0.48</td>
<td>1</td>
<td>0.15</td>
<td>6</td>
<td>1.59</td>
</tr>
<tr>
<td>Morbidly Obese (BMI &gt;40)</td>
<td>1</td>
<td>0.24</td>
<td>2</td>
<td>0.31</td>
<td>3</td>
<td>0.79</td>
</tr>
<tr>
<td>Weight Remained Stable over Past Month (&lt;1 to 2 pounds of usual weight)</td>
<td>355</td>
<td>84.32</td>
<td>511</td>
<td>78.37</td>
<td>227</td>
<td>60.05</td>
</tr>
<tr>
<td>Weight Change was Intentional†</td>
<td>10</td>
<td>2.38</td>
<td>28</td>
<td>4.29</td>
<td>39</td>
<td>10.32</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters: ND and MD; ND and D; ND and HD; MD and D; MD and HD; D and HD.

†Except for participants who reported Weight Change as Intentional (N=41 for ND, N=85 for MD, N=98 for D, N=75 for HD).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean = SD (N=65)</th>
<th>Range</th>
<th>Mean = SD (N=75)</th>
<th>Range</th>
<th>Mean = SD (N=37)</th>
<th>Range</th>
<th>Mean = SD (N=31)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index (BMI)</td>
<td>19.6</td>
<td>15.0</td>
<td>19.2</td>
<td>15.0</td>
<td>19.3</td>
<td>15.0</td>
<td>19.2</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Table 3.4. Mean Body Mass Index of Eating Disorder Subtypes, Female Participants, Spill by Disturbed Eating Severity.
Table 35. Mean Health Status of Eating Behavior Survey Female Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HDΔ (N=315)</th>
<th>NDΔ (N=431)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>3.18-0.95</td>
<td>3.75-0.88</td>
</tr>
<tr>
<td>Mean-SD</td>
<td>3.00-5.00</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>p-value</td>
<td>0.00&lt;0.01</td>
<td>0.00&lt;0.01</td>
</tr>
</tbody>
</table>

**Note:** The values in the table represent the mean health status scores for HD (HDΔ) and ND (NDΔ) groups, with ranges and standard deviations provided. The p-values indicate the statistical significance of the differences between the groups, with values less than 0.01 suggesting significant differences.
### Table 6. Prevalence of Emerging Behaviors by Gender and Age Group

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Female Participants</th>
<th>Male Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD+ (N=376)</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>HD- (N=212)</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Characteristics:** Spbd by Diagnosed Eming Severity

<table>
<thead>
<tr>
<th>Diagnoses of Emerging Disorder</th>
<th>N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Behavioral Syndrome</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Attention Deficit Hyperactivity Disorder</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Conduct Disorder</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Any Developmental Delay</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chronic Health Condition</td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>

**Diagnoses of Emerging Disorder:**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Distinct</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Distinct</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Highly Distinct</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Very Distinct</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Non-Distinct</td>
<td>143</td>
<td></td>
</tr>
</tbody>
</table>

**Diagnoses of Emerging Disorder:**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Distinct</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Distinct</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Highly Distinct</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Very Distinct</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Non-Distinct</td>
<td>143</td>
<td></td>
</tr>
</tbody>
</table>
Table 37. Mean Number of Bowel Irregularities of Eating Behavior Survey Female Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=421)</th>
<th>MD* (N=652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of Bowel Irregularities (0-3)</td>
<td>0.88±1.05</td>
<td>0.76±0.98</td>
<td>0.89±1.04</td>
<td>0.84±0.96</td>
<td>1.78</td>
<td>0.150</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.
#ANOVA was conducted.
and HD). The statistical differences revealed that all pairs (ND and MD, ND and HD, ND and D, MD and HD, MD and D, and HD and D) were significantly different (p<0.05).

ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and HD, ND and D, MD and HD, MD and D, and HD and D) were significantly different (p<0.05).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>p-value</th>
<th>% N (N=373)</th>
<th>% N (N=378)</th>
<th>% N (N=342)</th>
<th>% N (N=342)</th>
<th>% N (N=373)</th>
<th>% N (N=378)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dheeravaram Followed</td>
<td>&gt;0.001</td>
<td>128.19</td>
<td>118</td>
<td>181</td>
<td>57.67</td>
<td>218</td>
<td>36.31</td>
</tr>
</tbody>
</table>

Table 38. Frequencies of Failure Behavior Survey Female Participants Following a Specific Diet Regimen, Split by Divided Severity.
### Table 39. Mean Current Age and Age at Puberty of Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)†</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.78±1.54</td>
<td>19.74±1.63</td>
<td>19.65±1.54</td>
<td>19.85±1.65</td>
<td>0.27</td>
<td>0.849</td>
</tr>
<tr>
<td></td>
<td>18.00-25.00</td>
<td>18.00-26.00</td>
<td>18.00-26.00</td>
<td>18.00-23.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puberty Marker‡</td>
<td>11.63±1.46</td>
<td>11.78±1.44</td>
<td>11.76±1.55</td>
<td>12.62±1.84</td>
<td>6.58*</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>7.30-16.30</td>
<td>7.30-17.75</td>
<td>7.75-15.75</td>
<td>9.30-19.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

*ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters: 
*ND and MD; †ND and D; ‡ND and HD; §MD and D; ¶MD and HD; ¤D and HD.

†Except for Puberty Marker for those that chose not to report or were unsure (N=312 for ND, N=423 for MD, N=148 for D, N=52 for HD).

‡Puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.
### Table 40. Frequencies of Eating Behavior Survey Male Participants’ Weight Status, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>( \chi^2 )</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body Mass Index Category</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>13</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>1.33</td>
<td>0.262</td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>234</td>
<td>261</td>
<td>67</td>
<td>20</td>
<td>15.21\superscript{b,c}</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>67</td>
<td>130</td>
<td>56</td>
<td>26</td>
<td>9.48\superscript{ab}</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Obese Category 1 (BMI 30 to &lt;35)</td>
<td>11</td>
<td>24</td>
<td>20</td>
<td>6</td>
<td>11.54</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Obese Category 2 (BMI 35 to &lt;40)</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0.76</td>
<td>0.514</td>
</tr>
<tr>
<td>Morbidly Obese (BMI &gt;40)</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3.69</td>
<td>0.012</td>
</tr>
<tr>
<td><strong>Weight Remained Stable over Past Month</strong></td>
<td>275</td>
<td>331</td>
<td>89</td>
<td>26</td>
<td>20.10\superscript{ab}</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Weight Change was Intentional( ^\dagger )</td>
<td>14</td>
<td>42</td>
<td>25</td>
<td>10</td>
<td>0.53</td>
<td>0.663</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

\*ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:
*ND and MD; \*ND and D; \*ND and HD; \*MD and D; \*MD and HD; \*D and HD.

\( ^\dagger \)Except for participants that reported Weight Change as Intentional (N=31 for ND, N=77 for MD, N=42 for D, N=20 for HD).
Table 41. Mean Body Mass Index of Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F#</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index (Wt [kg]/Ht [m²])</td>
<td>Mean±SD*</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
</tr>
<tr>
<td></td>
<td>23.14±3.25</td>
<td>16.31-36.70</td>
<td>24.36±3.68</td>
<td>13.10-45.13</td>
<td>25.98±4.46</td>
<td>17.63-49.37</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

#ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters: \textsuperscript{a}ND and MD; \textsuperscript{b}ND and D; \textsuperscript{c}ND and HD; \textsuperscript{d}MD and D; \textsuperscript{e}MD and HD; \textsuperscript{f}D and HD.
Table 42. Mean Health Status of Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Health Status (1 to 5)†</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
</tr>
<tr>
<td></td>
<td>3.92±0.83</td>
<td>1.00-5.00</td>
<td>3.82±0.82</td>
<td>1.00-5.00</td>
<td>3.38±0.92</td>
<td>1.00-4.00</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

†ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:
  †ND and MD; ‡ND and D; ∗ND and HD; †MD and D; ‡MD and HD; ∗D and HD.

†Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of a Diet-Related Chronic Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition by a Health Care Provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Diet-Related Chronic Health Condition</td>
<td>12</td>
<td>17</td>
<td>10</td>
<td>4</td>
<td>1.23</td>
<td>0.296</td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>1.92</td>
<td>0.319</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1.92</td>
<td>0.25</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3.85</td>
<td>0.007</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.65</td>
<td>0.585</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>0.34</td>
<td>0.796</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>1.92</td>
<td>0.069</td>
</tr>
<tr>
<td>Diagnosis of an Eating Disorder by a Health Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0.87</td>
<td>0.455</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

#ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:

*ND and MD, *ND and D, *ND and HD, *MD and D, *MD and HD, *D and HD.
Table 44. Mean Number of Bowel Irregularities of Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=62)</th>
<th>F*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of Bowel Irregularities (0-3)</td>
<td>0.78±0.97</td>
<td>0.84±1.02</td>
<td>0.86±1.04</td>
<td>0.88±1.11</td>
<td>0.41</td>
<td>0.749</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

#ANOVA was conducted.
Table 45. Frequencies of Eating Behavior Survey Male Participants’ Diet Regimens, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary Regimen Followed</td>
<td>50</td>
<td>15.34</td>
<td>127</td>
<td>29.47</td>
<td>69</td>
<td>46.00</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation.

ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05).
Table 46. Mean Psychographic Characteristic Scores of Eating Behavior Survey Participants, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=747)</th>
<th>MD* (N=1083)</th>
<th>D* (N=528)</th>
<th>HD* (N=267)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
</tr>
<tr>
<td>Appearance Schema Inventory-Revised</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>2.83±0.67</td>
<td>1.00-4.75</td>
<td>3.15±0.64</td>
<td>1.00-4.88</td>
<td>3.61±0.61</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Motivational Salience (1 to 5)</td>
<td>3.39±0.68</td>
<td>1.00-5.00</td>
<td>3.59±0.66</td>
<td>1.25-5.00</td>
<td>3.81±0.68</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)</td>
<td>1.34±0.69</td>
<td>1.00-5.00</td>
<td>1.60±0.96</td>
<td>1.00-5.00</td>
<td>1.97±1.16</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)</td>
<td>2.81±1.20</td>
<td>0.67-4.33</td>
<td>3.15±1.12</td>
<td>1.00-5.00</td>
<td>3.59±1.15</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Total Number of Types of Weight Teasing Insults (0 to 3)</td>
<td>0.57±0.97</td>
<td>0.00-3.00</td>
<td>0.91±1.18</td>
<td>0.00-3.00</td>
<td>1.35±1.31</td>
<td>0.00-3.00</td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards Appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>2.51±0.93</td>
<td>1.00-5.00</td>
<td>2.98±0.97</td>
<td>1.00-5.00</td>
<td>3.66±0.89</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>2.46±1.13</td>
<td>1.00-5.00</td>
<td>2.88±1.16</td>
<td>1.00-5.00</td>
<td>3.52±1.05</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Information-Media (1 to 5)</td>
<td>2.57±0.91</td>
<td>1.00-5.00</td>
<td>2.86±0.90</td>
<td>1.00-5.00</td>
<td>3.24±0.66</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Total Body Image Intense Media Score (0 to 6)</td>
<td>1.56±1.21</td>
<td>0.00-6.00</td>
<td>1.87±1.26</td>
<td>0.00-6.00</td>
<td>2.23±1.30</td>
<td>0.00-6.00</td>
</tr>
<tr>
<td>Body Image Intense TV Viewing (0 to 2)</td>
<td>0.17±0.42</td>
<td>0.00-2.00</td>
<td>0.23±0.49</td>
<td>0.00-2.00</td>
<td>0.33±0.34</td>
<td>0.00-2.00</td>
</tr>
<tr>
<td>Body Image Intense Magazine Viewing (0 to 2)</td>
<td>0.63±0.77</td>
<td>0.00-2.00</td>
<td>0.77±0.81</td>
<td>0.00-2.00</td>
<td>0.98±0.82</td>
<td>0.00-2.00</td>
</tr>
<tr>
<td>Body Image Intense Website Viewing (0 to 2)</td>
<td>0.76±0.53</td>
<td>0.00-2.00</td>
<td>0.86±0.52</td>
<td>0.00-2.00</td>
<td>0.91±0.51</td>
<td>0.00-2.00</td>
</tr>
<tr>
<td>Patient Health Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td>3.54±3.72</td>
<td>0.00-24.00</td>
<td>4.92±3.89</td>
<td>0.00-23.00</td>
<td>7.63±4.80</td>
<td>0.00-22.00</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (0 to 21)</td>
<td>3.57±3.77</td>
<td>0.00-20.00</td>
<td>5.03±4.18</td>
<td>0.00-21.00</td>
<td>7.51±4.90</td>
<td>0.00-21.00</td>
</tr>
<tr>
<td>Florida Obsessive Compulsive Inventory (FOCI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder Severity (0 to 20)</td>
<td>4.53±2.87</td>
<td>0.00-14.00</td>
<td>4.83±2.89</td>
<td>0.00-15.00</td>
<td>6.32±3.32</td>
<td>0.00-17.00</td>
</tr>
<tr>
<td>Table 46: Correl. Mean Psychographic Characteristic Scores of Emotion-Deficit: Survey Participants, Sph by Disturbed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean=SD</th>
<th>Range</th>
<th>%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Sample</td>
<td>0.31=0.28</td>
<td>0.12=1.57</td>
<td>4.5%</td>
<td>0.455</td>
</tr>
<tr>
<td>Emotion-Deficit</td>
<td>0.31=0.28</td>
<td>0.12=1.57</td>
<td>4.5%</td>
<td>0.455</td>
</tr>
<tr>
<td>Emotionally Disturbed</td>
<td>0.31=0.28</td>
<td>0.12=1.57</td>
<td>4.5%</td>
<td>0.455</td>
</tr>
<tr>
<td>Emotionally Stable</td>
<td>0.31=0.28</td>
<td>0.12=1.57</td>
<td>4.5%</td>
<td>0.455</td>
</tr>
</tbody>
</table>

Note: SD = Standard Deviation; % = Percentage; p-value = Significance Level.
Table 4: Mean Psychosocial Characteristic Scores of Family Behavior Survey Participants, Sib by Divided

<table>
<thead>
<tr>
<th>Scale Category</th>
<th>N = 119</th>
<th>N = 967</th>
<th>N = 287</th>
<th>N = 312</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Culture</td>
<td>80.00</td>
<td>75.00</td>
<td>73.00</td>
<td>74.00</td>
</tr>
<tr>
<td>Appearance</td>
<td>1.00</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>1.00</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Perception of Body Weight</td>
<td>1.00</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Note: For those who scored 0.50, N = 184 for ND, N = 247 for HD, N = 312 for ND, N = 287 for HD, N = 312 for ND, N = 247 for HD.
Table 47. Frequencies of Weight Teasing Insults in Eating Behavior Survey Participants, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=747)</th>
<th>MD* (N=1083)</th>
<th>D* (N=528)</th>
<th>HD* (N=267)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>225 30.12</td>
<td>462 42.66</td>
<td>308 58.33</td>
<td>180 67.42</td>
<td>57.26*</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>114 15.26</td>
<td>278 25.67</td>
<td>216 40.91</td>
<td>143 53.56</td>
<td>68.21*</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>86 11.51</td>
<td>243 22.44</td>
<td>195 36.93</td>
<td>138 51.69</td>
<td>78.51*</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

#ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05).
**Table 48. Frequencies of Eating Behavior Survey Participants’ Use of Body Image Intense Media, Split by Disturbed Eating Severity Category**

<table>
<thead>
<tr>
<th>Favorite Body Image Intense Media</th>
<th>ND (N=747)</th>
<th>MD (N=1083)</th>
<th>D (N=528)</th>
<th>HD (N=267)</th>
<th>F§</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Number of Favorite TV Programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>102</td>
<td>13.65</td>
<td>183</td>
<td>16.90</td>
<td>133</td>
<td>25.19</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>12</td>
<td>1.61</td>
<td>33</td>
<td>3.05</td>
<td>20</td>
<td>3.79</td>
</tr>
<tr>
<td>Number of Favorite Magazines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>201</td>
<td>26.91</td>
<td>313</td>
<td>28.90</td>
<td>170</td>
<td>32.20</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>134</td>
<td>17.94</td>
<td>263</td>
<td>24.28</td>
<td>175</td>
<td>33.14</td>
</tr>
<tr>
<td>Number of Favorite Websites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>495</td>
<td>66.27</td>
<td>770</td>
<td>71.10</td>
<td>386</td>
<td>73.11</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>38</td>
<td>5.09</td>
<td>83</td>
<td>7.66</td>
<td>48</td>
<td>9.09</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:

aND and MD; bND and D; cND and HD; dMD and D; eMD and HD; fD and HD.
Table 49. Frequencies of Eating Behavior Survey Participants’ Perceptions of Body Weight Over Time, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=747)</th>
<th>MD* (N=1083)</th>
<th>D* (N=528)</th>
<th>HD* (N=267)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight in 1st grade (about age 6)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>438 (58.63%)</td>
<td>555 (51.25%)</td>
<td>251 (47.54%)</td>
<td>106 (39.70%)</td>
<td>11.28&lt;sup&gt;a&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Average</td>
<td>274 (36.68%)</td>
<td>427 (39.43%)</td>
<td>208 (39.39%)</td>
<td>108 (40.45%)</td>
<td>0.66</td>
<td>0.58</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>35 (4.69%)</td>
<td>101 (9.33%)</td>
<td>69 (13.07%)</td>
<td>53 (19.85%)</td>
<td>20.13&lt;sup&gt;#&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Weight in 6th grade (about age 12)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>358 (47.93%)</td>
<td>454 (41.92%)</td>
<td>157 (29.73%)</td>
<td>67 (25.09%)</td>
<td>23.63&lt;sup&gt;a&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Average</td>
<td>268 (35.88%)</td>
<td>371 (34.26%)</td>
<td>185 (35.04%)</td>
<td>83 (31.09%)</td>
<td>0.70</td>
<td>0.55</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>121 (16.20%)</td>
<td>258 (23.82%)</td>
<td>186 (35.23%)</td>
<td>117 (43.82%)</td>
<td>37.17&lt;sup&gt;#&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Weight in 10th grade (about age 16)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>336 (44.98%)</td>
<td>427 (39.43%)</td>
<td>147 (27.84%)</td>
<td>55 (20.60%)</td>
<td>25.02&lt;sup&gt;a&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Average</td>
<td>325 (43.51%)</td>
<td>464 (42.84%)</td>
<td>233 (44.13%)</td>
<td>109 (40.82%)</td>
<td>0.29</td>
<td>0.83</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>86 (11.51%)</td>
<td>192 (17.73%)</td>
<td>148 (28.03%)</td>
<td>103 (38.58%)</td>
<td>40.14&lt;sup&gt;#&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Current Weight</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>250 (33.47%)</td>
<td>278 (25.67%)</td>
<td>52 (9.85%)</td>
<td>17 (6.37%)</td>
<td>51.04&lt;sup&gt;b&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Average</td>
<td>414 (55.42%)</td>
<td>598 (55.22%)</td>
<td>286 (54.17%)</td>
<td>108 (40.45%)</td>
<td>6.97</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>83 (11.11%)</td>
<td>207 (19.11%)</td>
<td>190 (35.98%)</td>
<td>142 (53.18%)</td>
<td>92.00&lt;sup&gt;#&lt;/sup&gt;</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

# ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05), except where otherwise noted in superscript letters.

<sup>a</sup> All pairs are significantly different (p<0.05), except for MD and D.

<sup>b</sup> All pairs are significantly different (p<0.05), except for D and HD.
Figure 6. Frequencies of Body Weight Perceptions as Slightly Heavy or Overweight Over Time, Split by Disturbed Eating Severity Category

*T1=1st grade; T2=6th grade; T3=10th grade; T4=Currently
Non-Disturbed: y=1.48x + 7.24; Mildly Disturbed: y=2.33x + 11.69;
Disturbed: y=6.03x + 12.90; Highly Disturbed: y=9.48x + 15.17
Figure 7. Frequencies of Body Weight Perceptions as Very Thin or Thin Over Time, Split by Disturbed Eating Severity Category

*T1=1st grade; T2=6th grade; T3=10th grade; T4=Currently
Non-Disturbed: y=-7.84x + 65.86; Mildly Disturbed: y=-7.92x + 59.38;
Disturbed: y=-11.50x + 54.48; Highly Disturbed: y=-10.45x +49.06
Figure 8. Frequencies of Body Weight Perceptions as Average Over Time, Split by Disturbed Eating Severity Category

* T1=1st grade; T2=6th grade; T3=10th grade; T4=Currently
Non-Disturbed: $y=6.39x + 26.91$; Mildly Disturbed: $y=5.60x + 28.95$;
Disturbed: $y=5.34x + 29.83$; Highly Disturbed: $y=0.97x + 35.77$
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Range</th>
<th>t-value</th>
<th>p-value</th>
<th>F</th>
<th>Mean</th>
<th>SD</th>
<th>HD (N=275)</th>
<th>D (N=378)</th>
<th>P (N=652)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total Obsessive Compulsive Disorder Severity (0 to 20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.0%</td>
<td>22.5%</td>
<td>33.3%</td>
<td>44.4%</td>
<td>55.5%</td>
<td>66.6%</td>
<td>77.7%</td>
<td>88.8%</td>
<td>99.9%</td>
<td></td>
</tr>
<tr>
<td>--------</td>
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<td>-------</td>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>10.0%</td>
<td>20.0%</td>
<td>30.0%</td>
<td>40.0%</td>
<td>50.0%</td>
<td>60.0%</td>
<td>70.0%</td>
<td>80.0%</td>
<td>90.0%</td>
<td></td>
</tr>
<tr>
<td>10.0%</td>
<td>20.0%</td>
<td>30.0%</td>
<td>40.0%</td>
<td>50.0%</td>
<td>60.0%</td>
<td>70.0%</td>
<td>80.0%</td>
<td>90.0%</td>
<td></td>
</tr>
<tr>
<td>10.0%</td>
<td>20.0%</td>
<td>30.0%</td>
<td>40.0%</td>
<td>50.0%</td>
<td>60.0%</td>
<td>70.0%</td>
<td>80.0%</td>
<td>90.0%</td>
<td></td>
</tr>
<tr>
<td>10.0%</td>
<td>20.0%</td>
<td>30.0%</td>
<td>40.0%</td>
<td>50.0%</td>
<td>60.0%</td>
<td>70.0%</td>
<td>80.0%</td>
<td>90.0%</td>
<td></td>
</tr>
</tbody>
</table>

Table 5a. Corr. Mean Psychographic Characteristic Scores of Emotion Behavior Survey Female Participants Split by Diagnosed Anxiety Severity Category.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=421)</th>
<th>MD* (652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceptions of Body Weight Score (1 to 3)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight in 1(^{st}) grade</td>
<td>1.45±0.57</td>
<td>1.00-3.00</td>
<td>1.53±0.63</td>
<td>1.00-3.00</td>
<td>1.62±0.68</td>
<td>1.00-3.00</td>
</tr>
<tr>
<td>Weight in 6(^{th}) grade</td>
<td>1.65±0.71</td>
<td>1.00-3.00</td>
<td>1.72±0.75</td>
<td>1.00-3.00</td>
<td>1.99±0.79</td>
<td>1.00-3.00</td>
</tr>
<tr>
<td>Weight in 10(^{th}) grade</td>
<td>1.64±0.66</td>
<td>1.00-3.00</td>
<td>1.73±0.68</td>
<td>1.00-3.00</td>
<td>1.98±0.74</td>
<td>1.00-3.00</td>
</tr>
<tr>
<td>Current Weight</td>
<td>1.75±0.63</td>
<td>1.00-3.00</td>
<td>1.94±0.67</td>
<td>1.00-3.00</td>
<td>2.27±0.62</td>
<td>1.00-3.00</td>
</tr>
<tr>
<td><strong>Body Image Distortion (-4 to 4)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.70±0.60</td>
<td>-1.00-2.00</td>
<td>0.82±0.61</td>
<td>-1.00-3.00</td>
<td>1.06±0.65</td>
<td>-1.00-3.00</td>
</tr>
<tr>
<td><strong>Childhood Family Mealtime Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.49±0.54</td>
<td>1.00-4.60</td>
<td>1.56±0.56</td>
<td>1.00-4.40</td>
<td>1.73±0.67</td>
<td>1.00-4.60</td>
</tr>
<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>3.17±1.06</td>
<td>1.00-5.00</td>
<td>3.17±1.10</td>
<td>1.00-5.00</td>
<td>3.19±1.15</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>1.63±0.66</td>
<td>1.00-4.40</td>
<td>1.85±0.82</td>
<td>1.00-5.00</td>
<td>2.42±1.04</td>
<td>1.00-5.00</td>
</tr>
<tr>
<td>Emphasis on Mother's Weight (1 to 5)</td>
<td>1.76±0.74</td>
<td>1.00-5.00</td>
<td>1.93±0.85</td>
<td>1.00-5.00</td>
<td>2.28±0.96</td>
<td>1.00-5.00</td>
</tr>
</tbody>
</table>

\*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation
\#ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05), except for where otherwise noted in superscript letters:
\(^{a}\)ND and MD; \(^{b}\)ND and D; \(^{c}\)ND and HD; \(^{d}\)MD and D; \(^{e}\)MD and HD; \(^{f}\)D and HD are significantly different (p<0.05).
\(^{†}\)Except for FOCI (N=139 for ND, N=266 for MD, N=209 for D, N=142 for HD).
\(^{‡}\)Except for Weight Teasing Effect, which included only those who were weight teased (N=139 for ND, N=266 for MD, N=209 for D, N=142 for HD).
\(^{§}\)Except for participants who reported dieting (N=69 for ND, N=240 for MD, N=218 for D, N=181 for HD).
Table 51. Frequencies of Weight Teasing Insults in Eating Behavior Survey Female Participants, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=421)</th>
<th>MD* (N=652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>135</td>
<td>32.07</td>
<td>259</td>
<td>39.72</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>57</td>
<td>13.54</td>
<td>138</td>
<td>21.17</td>
</tr>
<tr>
<td>Name Called (e.g., FatSo)</td>
<td>39</td>
<td>9.26</td>
<td>115</td>
<td>17.64</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed

ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05).
Table 52. Frequencies of Eating Behavior Survey Female Participants’ Use of Body Image Intense Media, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Favorite Body Image Intense Media</th>
<th>ND* (N=421)</th>
<th>MD* (652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F^#</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>Number of Favorite TV Programs that were Body Image Intense</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>87</td>
<td>20.67</td>
<td>153</td>
<td>23.47</td>
<td>118</td>
<td>31.22</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>12</td>
<td>2.85</td>
<td>31</td>
<td>4.75</td>
<td>19</td>
<td>5.03</td>
</tr>
<tr>
<td><strong>Number of Favorite Magazines that were Body Image Intense</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>151</td>
<td>35.87</td>
<td>219</td>
<td>33.59</td>
<td>124</td>
<td>32.80</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>115</td>
<td>27.32</td>
<td>231</td>
<td>35.43</td>
<td>163</td>
<td>43.12</td>
</tr>
<tr>
<td><strong>Number of Favorite Websites that were Body Image Intense</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>309</td>
<td>73.40</td>
<td>506</td>
<td>77.6</td>
<td>293</td>
<td>77.51</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>25</td>
<td>5.94</td>
<td>53</td>
<td>8.13</td>
<td>41</td>
<td>10.85</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed

^ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:

^aND and MD; ^bND and D; ^cND and HD; ^dMD and D; ^eMD and HD; ^fD and HD.
Table 53. Frequencies of Eating Behavior Survey Female Participants’ Perceptions of Body Weight Over Time, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=421)</th>
<th>MD* (N=652)</th>
<th>D* (N=378)</th>
<th>HD* (N=215)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight in 1st grade (about age 6)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>247</td>
<td>58.67</td>
<td>354</td>
<td>54.29</td>
<td>188</td>
<td>49.74</td>
</tr>
<tr>
<td>Average</td>
<td>159</td>
<td>37.77</td>
<td>253</td>
<td>38.80</td>
<td>147</td>
<td>38.89</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>15</td>
<td>3.56</td>
<td>45</td>
<td>6.90</td>
<td>43</td>
<td>11.38</td>
</tr>
<tr>
<td><strong>Weight in 6th grade (about age 12)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>207</td>
<td>49.17</td>
<td>297</td>
<td>45.55</td>
<td>120</td>
<td>31.75</td>
</tr>
<tr>
<td>Average</td>
<td>156</td>
<td>37.05</td>
<td>239</td>
<td>36.66</td>
<td>140</td>
<td>37.04</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>58</td>
<td>13.78</td>
<td>116</td>
<td>17.79</td>
<td>118</td>
<td>31.22</td>
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<tr>
<td><strong>Weight in 10th grade (about age 16)</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Very thin or thin</td>
<td>193</td>
<td>45.84</td>
<td>264</td>
<td>40.49</td>
<td>108</td>
<td>28.57</td>
</tr>
<tr>
<td>Average</td>
<td>186</td>
<td>44.18</td>
<td>300</td>
<td>46.01</td>
<td>171</td>
<td>45.24</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>42</td>
<td>9.98</td>
<td>88</td>
<td>13.50</td>
<td>99</td>
<td>26.19</td>
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<tr>
<td><strong>Current Weight</strong></td>
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<tr>
<td>Very thin or thin</td>
<td>149</td>
<td>35.39</td>
<td>166</td>
<td>25.46</td>
<td>35</td>
<td>9.26</td>
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<tr>
<td>Average</td>
<td>229</td>
<td>54.39</td>
<td>359</td>
<td>55.06</td>
<td>206</td>
<td>54.50</td>
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<tr>
<td>Slightly heavy or overweight</td>
<td>43</td>
<td>10.21</td>
<td>127</td>
<td>19.48</td>
<td>137</td>
<td>36.24</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed

ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05), except for where otherwise noted in superscript letters:

*ND and MD; bND and D; cND and HD; dMD and D; eMD and HD; fD and HD are significantly different (p<0.05).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Severity</th>
<th>Score</th>
<th>Range</th>
<th>Mean (SD, N=150)</th>
<th>Median (Range)</th>
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<td>Appearance</td>
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<td>10.00</td>
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<td>17.50</td>
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<td>10.00</td>
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<td></td>
<td>20.00</td>
<td>10.00</td>
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</tr>
</tbody>
</table>

Table 5.4: Mean Psychological Characteristics Score of Early Behavor Survey Male Participants, Split by Disturbed Eating
<table>
<thead>
<tr>
<th>p-value</th>
<th>F</th>
<th>Yellow-SD Range</th>
<th>D3-SD Range</th>
<th>N5D-SD Range</th>
<th>CDS-SD Range</th>
<th>D5-SD Range</th>
<th>Black-SD Range</th>
<th>D3-SD Range</th>
<th>N5D-SD Range</th>
<th>CDS-SD Range</th>
<th>D5-SD Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>0.84</td>
<td>2.00-8.04</td>
<td>0.00-1.42</td>
<td>0.00-2.27</td>
<td>0.00-2.48</td>
<td>0.00-2.62</td>
<td>0.00-2.75</td>
<td>0.00-2.92</td>
<td>0.00-2.95</td>
<td>0.00-2.97</td>
<td>0.00-2.99</td>
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<td>0.98</td>
<td>1.00-3.32</td>
<td>0.00-1.56</td>
<td>0.00-2.57</td>
<td>0.00-2.31</td>
<td>0.00-3.12</td>
<td>0.00-3.32</td>
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<td>0.00-3.18</td>
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<td>0.00-3.64</td>
<td>0.00-3.85</td>
<td>0.00-4.07</td>
<td>0.00-4.03</td>
<td>0.00-4.04</td>
<td>0.00-4.06</td>
</tr>
<tr>
<td>0.001</td>
<td>1.30</td>
<td>1.00-5.52</td>
<td>0.00-3.20</td>
<td>0.00-4.25</td>
<td>0.00-3.91</td>
<td>0.00-4.72</td>
<td>0.00-4.93</td>
<td>0.00-5.15</td>
<td>0.00-5.11</td>
<td>0.00-5.12</td>
<td>0.00-5.14</td>
</tr>
</tbody>
</table>

Table 5.4: Continued. Mean Psychophysiological Characteristic Scores of Ethnic Behavior Survey. Male Participants, Split by Disturbed Eating Severity.
Table 54, cont’d. Mean Psychographic Characteristic Scores of Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptions of Body Weight Score (1 to 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight in 1st grade</td>
<td>1.48±0.61</td>
<td>1.66±0.70</td>
<td>1.75±0.73</td>
<td>1.92±0.79</td>
<td>10.84</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight in 6th grade</td>
<td>1.73±0.77</td>
<td>1.97±0.83</td>
<td>2.21±0.81</td>
<td>2.37±0.74</td>
<td>17.95</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight in 10th grade</td>
<td>1.70±0.69</td>
<td>1.86±0.78</td>
<td>2.07±0.77</td>
<td>2.46±0.64</td>
<td>20.56</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Weight</td>
<td>1.81±0.63</td>
<td>1.93±0.66</td>
<td>2.24±0.64</td>
<td>2.54±0.58</td>
<td>29.34</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td>1.00-3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Image Distortion (-2 to 3)</td>
<td>0.56±0.60</td>
<td>0.50±0.62</td>
<td>0.63±0.69</td>
<td>0.96±0.71</td>
<td>8.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>-1.00-2.00</td>
<td>-2.00-2.00</td>
<td>-1.00-2.00</td>
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</tr>
<tr>
<td>Childhood Family Mealtime Questionnaire</td>
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</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.55±0.48</td>
<td>1.72±0.62</td>
<td>2.09±0.69</td>
<td>2.33±0.74</td>
<td>45.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
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<td>1.00-3.80</td>
<td>1.00-3.60</td>
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<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>3.38±1.01</td>
<td>3.47±1.00</td>
<td>3.57±0.88</td>
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<td>1.38</td>
<td>0.250</td>
</tr>
<tr>
<td>Range</td>
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</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>1.49±0.56</td>
<td>1.90±0.78</td>
<td>2.28±0.84</td>
<td>2.78±0.92</td>
<td>72.13</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-4.20</td>
<td>1.00-4.80</td>
<td>1.20-5.00</td>
<td>1.20-5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emphasis on Mother’s Weight (1 to 5)</td>
<td>0.68±1.71</td>
<td>1.98±0.81</td>
<td>2.24±0.84</td>
<td>2.76±0.88</td>
<td>35.60</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>1.00-4.33</td>
<td>1.00-4.67</td>
<td>1.00-4.67</td>
<td>1.00-4.67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed, SD=Standard Deviation
ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05), except for where otherwise noted in superscript letters:

aND and MD; bND and D; cND and HD; dMD and D; eMD and HD; fD and HD are significantly different (p<0.05).
†Except for FOCI (N=99 for ND, N=189 for MD, N=86 for D, N=32 for HD).
‡Except for Weight Teasing Effect, which included only those who were weight teased (N=93 for ND, N=207 for MD, N=103 for D, N=42 for HD).
§Except for participants who reported dieting (N=50 for ND, N=127 for MD, N=69 for D, N=35 for HD).
Table 55. Frequencies of Weight Teasing Insults in Eating Behavior Survey Male Participants, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>Perception of Teasing Scale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>90</td>
<td>27.61</td>
<td>203</td>
<td>47.10</td>
<td>101</td>
<td>67.33</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>57</td>
<td>17.48</td>
<td>140</td>
<td>32.48</td>
<td>75</td>
<td>50.00</td>
</tr>
<tr>
<td>Name Called (e.g., FatSo)</td>
<td>47</td>
<td>14.42</td>
<td>128</td>
<td>29.70</td>
<td>77</td>
<td>51.33</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed
ANOVA and Student Newman Keuls post-hoc analyses revealed that all pairs (ND and MD, ND and D, ND and HD, MD and D, MD and HD, D and HD) are significantly different (p<0.05), except for where otherwise noted in superscript letters.

*All pairs are significantly different (p<0.05), except for D and HD.
Table 56. Frequencies of Eating Behavior Survey Male Participants’ Use of Body Image Intense Media, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th></th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F#</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Number of Favorite TV Programs that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>15</td>
<td>4.60</td>
<td>30</td>
<td>6.96</td>
<td>15</td>
<td>10.00</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>0</td>
<td>0.00</td>
<td>2</td>
<td>.46</td>
<td>1</td>
<td>.67</td>
</tr>
<tr>
<td>Number of Favorite Magazines that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>50</td>
<td>15.34</td>
<td>94</td>
<td>21.81</td>
<td>46</td>
<td>30.67</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>19</td>
<td>5.83</td>
<td>32</td>
<td>7.42</td>
<td>12</td>
<td>8.00</td>
</tr>
<tr>
<td>Number of Favorite Websites that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>186</td>
<td>57.06</td>
<td>264</td>
<td>61.25</td>
<td>93</td>
<td>62.00</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>13</td>
<td>3.99</td>
<td>30</td>
<td>6.96</td>
<td>7</td>
<td>4.67</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.
#ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters: 
aND and MD; bND and D; cND and HD; dMD and D; eMD and HD; fD and HD.
Table 57. Frequencies of Eating Behavior Survey Male Participants’ Perceptions of Body Weight Over Time, Split by Disturbed Eating Severity Category

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=326)</th>
<th>MD* (N=431)</th>
<th>D* (N=150)</th>
<th>HD* (N=52)</th>
<th>F#</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Weight in 1st grade (about age 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>191</td>
<td>58.59</td>
<td>201</td>
<td>46.64</td>
<td>63</td>
<td>42.00</td>
</tr>
<tr>
<td>Average</td>
<td>115</td>
<td>35.28</td>
<td>174</td>
<td>40.37</td>
<td>61</td>
<td>40.67</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>20</td>
<td>6.13</td>
<td>56</td>
<td>12.99</td>
<td>26</td>
<td>17.33</td>
</tr>
<tr>
<td>Weight in 6th grade (about age 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>151</td>
<td>46.32</td>
<td>157</td>
<td>36.43</td>
<td>37</td>
<td>24.67</td>
</tr>
<tr>
<td>Average</td>
<td>112</td>
<td>34.36</td>
<td>132</td>
<td>30.63</td>
<td>45</td>
<td>30.00</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>63</td>
<td>19.33</td>
<td>142</td>
<td>32.95</td>
<td>68</td>
<td>45.33</td>
</tr>
<tr>
<td>Weight in 10th grade (about age 16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>143</td>
<td>43.87</td>
<td>163</td>
<td>37.82</td>
<td>39</td>
<td>26.00</td>
</tr>
<tr>
<td>Average</td>
<td>139</td>
<td>42.64</td>
<td>164</td>
<td>38.05</td>
<td>62</td>
<td>41.33</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>44</td>
<td>13.50</td>
<td>104</td>
<td>24.13</td>
<td>49</td>
<td>32.67</td>
</tr>
<tr>
<td>Current Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>101</td>
<td>30.98</td>
<td>112</td>
<td>25.99</td>
<td>17</td>
<td>11.33</td>
</tr>
<tr>
<td>Average</td>
<td>185</td>
<td>56.75</td>
<td>239</td>
<td>55.45</td>
<td>80</td>
<td>53.33</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>40</td>
<td>12.27</td>
<td>80</td>
<td>18.56</td>
<td>53</td>
<td>35.33</td>
</tr>
</tbody>
</table>

*ND=Non-Disturbed, MD=Mildly Disturbed, D=Disturbed, HD=Highly Disturbed.

ANOVA and Student Newman Keuls post-hoc analyses show significant differences (p<0.05) between pairs by superscript letters:

aND and MD; bND and D; cND and HD; dMD and D; eMD and HD; fD and HD.
PREDICTING DISTURBED EATING BEHAVIORS

To answer Research Question 1: *Which demographic and psychographic characteristics are associated with the presence of disturbed eating behaviors in young adults?*, and create a parsimonious model predictive of disturbed eating severity, stepwise regression analysis was conducted. Stepwise regression analysis begins with backward entry of independent variables thought to be predictive of the dependent variable (i.e., Probability of F-to-enter $\leq 0.050$). Once significance has been reached, it adds the independent variables again (i.e., Probability of F-to-enter $\geq 0.100$), based on the size of F, and determines overall significance again with the goal of avoiding local minima in the global optimization of the model fit$^{276}$. That is, stepwise regression builds a prediction model by, at each stage, adding to the model a variable that has the highest partial correlation with the dependent variable, taking into account all the variables currently in the model. This analysis process was used because many social science researchers have found it to yield adequate, parsimonious and robust results$^{277}$.

The independent variables used to create the prediction model were initially chosen (i.e., included in the EBS) based on previous studies and theories indicating associations between these variables and disturbed eating. Those variables selected for possible inclusion in the prediction model were reduced to those found to be moderately or highly correlated (i.e., Pearson correlations $>0.25$) with Disturbed Eating Severity score (dependent variable) and not highly intercorrelated with other independent variables (i.e., Pearson correlations $>0.50$) to avoid multicollinearity$^{278}$.

Bivariate correlation coefficients of the Disturbed Eating Severity score (dependent variable) and all possible explanatory variables revealed moderate and highly
significant correlations (Pearson’s coefficient >0.25) for the following 15 independent variables: Depression, Dichotomous Thinking, Weight Teasing Frequency, OCD Severity, Mealtime Communication-Based Stress, Pressures from the Media, Anxiety, Appearance Weight Control, Emphasis on Mother’s Weight, Self-Evaluative Salience, Motivational Salience, Self-Esteem, Internalization-General, Information-Media, and Mentally Unhealthy Days (Table 58). These 15 variables were further examined for high intercorrelations (Pearson’s coefficient >0.50) with each other to decide whether they should be included in the prediction model.
<table>
<thead>
<tr>
<th>Predictor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disturbed Eating Severity</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Depression</td>
<td>0.54*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Dichotomous Thinking</td>
<td>0.28*</td>
<td>0.14</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Weight Teasing Frequency</td>
<td>0.34*</td>
<td>0.26*</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OCD Severity</td>
<td>0.36*</td>
<td>0.48*</td>
<td>0.09</td>
<td>0.17*</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mealtime Communication-Based Stress</td>
<td>0.25*</td>
<td>0.35*</td>
<td>0.03</td>
<td>0.30*</td>
<td>0.21*</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>7. Pressures from the Media</td>
<td>0.49*</td>
<td>0.27*</td>
<td>0.24*</td>
<td>0.20*</td>
<td>0.20*</td>
<td>0.10</td>
<td>---</td>
</tr>
<tr>
<td>8. Body Image Distortion</td>
<td>0.24*</td>
<td>0.15*</td>
<td>0.11*</td>
<td>0.03</td>
<td>0.08*</td>
<td>0.03</td>
<td>0.23*</td>
</tr>
<tr>
<td>9. Gender</td>
<td>0.18*</td>
<td>0.09*</td>
<td>0.08*</td>
<td>-0.06*</td>
<td>0.07*</td>
<td>-0.10</td>
<td>0.38*</td>
</tr>
<tr>
<td>10. Age</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.06*</td>
<td>0.00</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>11. Diagnosis of an Eating Disorder</td>
<td>0.15*</td>
<td>0.10*</td>
<td>0.05*</td>
<td>-0.06*</td>
<td>0.06*</td>
<td>0.08*</td>
<td>0.11*</td>
</tr>
<tr>
<td>12. Puberty Marker</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04*</td>
<td>0.00</td>
<td>0.01</td>
<td>0.05*</td>
<td>-0.03</td>
</tr>
<tr>
<td>13. BMI</td>
<td>0.20*</td>
<td>0.06*</td>
<td>0.05*</td>
<td>0.37*</td>
<td>0.03</td>
<td>0.11*</td>
<td>0.11*</td>
</tr>
<tr>
<td>14. Anxiety</td>
<td>0.49*</td>
<td>0.77*</td>
<td>0.17*</td>
<td>0.23*</td>
<td>0.53*</td>
<td>0.31*</td>
<td>0.30*</td>
</tr>
<tr>
<td>15. Appearance Weight Control</td>
<td>0.45*</td>
<td>0.34*</td>
<td>0.14*</td>
<td>0.54*</td>
<td>0.22*</td>
<td>0.43*</td>
<td>0.36*</td>
</tr>
<tr>
<td>16. Mealtime Structure</td>
<td>0.03</td>
<td>0.07*</td>
<td>0.01</td>
<td>0.10*</td>
<td>0.05*</td>
<td>0.13*</td>
<td>-0.03</td>
</tr>
<tr>
<td>17. Emphasis on Mother's Weight</td>
<td>0.31*</td>
<td>0.26*</td>
<td>0.07*</td>
<td>0.26*</td>
<td>0.15*</td>
<td>0.38*</td>
<td>0.26*</td>
</tr>
<tr>
<td>18. Self-Evaluative Salience</td>
<td>0.52*</td>
<td>0.41*</td>
<td>0.28*</td>
<td>0.24*</td>
<td>0.30*</td>
<td>0.17*</td>
<td>0.64*</td>
</tr>
<tr>
<td>19. Motivational Salience</td>
<td>0.27*</td>
<td>0.11</td>
<td>0.21*</td>
<td>0.06</td>
<td>0.14*</td>
<td>-0.04*</td>
<td>0.40*</td>
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<tr>
<td>20. Self-Esteem</td>
<td>0.52*</td>
<td>0.59*</td>
<td>0.16*</td>
<td>0.23*</td>
<td>0.36*</td>
<td>0.33*</td>
<td>0.36*</td>
</tr>
<tr>
<td>21. Health Value</td>
<td>-0.08*</td>
<td>-0.15*</td>
<td>0.02</td>
<td>-0.08*</td>
<td>-0.06*</td>
<td>-0.15*</td>
<td>0.01</td>
</tr>
<tr>
<td>22. Internalization-General</td>
<td>0.43*</td>
<td>0.26*</td>
<td>0.24*</td>
<td>0.14*</td>
<td>0.18*</td>
<td>0.09*</td>
<td>0.74*</td>
</tr>
<tr>
<td>23. Information-Media</td>
<td>0.30*</td>
<td>0.16*</td>
<td>0.19*</td>
<td>0.08*</td>
<td>0.16*</td>
<td>0.07*</td>
<td>0.55*</td>
</tr>
<tr>
<td>24. Emotional Regulation</td>
<td>-0.23*</td>
<td>-0.34*</td>
<td>-0.03</td>
<td>-0.11*</td>
<td>-0.25*</td>
<td>-0.24*</td>
<td>-0.19*</td>
</tr>
<tr>
<td>25. Physically Unhealthy Days</td>
<td>0.17*</td>
<td>0.23*</td>
<td>0.03</td>
<td>0.06*</td>
<td>0.15*</td>
<td>0.07*</td>
<td>0.06*</td>
</tr>
<tr>
<td>26. Mentally Unhealthy Days</td>
<td>0.37*</td>
<td>0.57*</td>
<td>0.12*</td>
<td>0.12*</td>
<td>0.41*</td>
<td>0.16*</td>
<td>0.24*</td>
</tr>
<tr>
<td>27. Task-Oriented Coping</td>
<td>-0.17*</td>
<td>-0.24*</td>
<td>-0.02</td>
<td>-0.06*</td>
<td>-0.10*</td>
<td>-0.21*</td>
<td>-0.07*</td>
</tr>
<tr>
<td>28. Emotional-Oriented Coping</td>
<td>0.35*</td>
<td>0.45*</td>
<td>0.17*</td>
<td>0.14*</td>
<td>0.34*</td>
<td>0.21*</td>
<td>0.30*</td>
</tr>
<tr>
<td>29. Avoidant Coping</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.04</td>
<td>-0.05*</td>
<td>0.04</td>
<td>-0.11*</td>
<td>0.10*</td>
</tr>
</tbody>
</table>

*Pearson correlation coefficients are statistically significant at p<0.05.
Table 58 Cont’d., Bivariate Correlations Among Predictors of All Eating Behavior Survey Participants (N=2625)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disturbed Eating Severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2. Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Dichotomous Thinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Weight Teasing Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OCD Severity</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Mealtime Communication-Based Stress</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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*Pearson correlation coefficients are statistically significant at p<0.05.
### Table 58 Cont’d., Bivariate Correlations Among Predictors of All Eating Behavior Survey Participants (N=2625)

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*Pearson correlation coefficients are statistically significant at p<0.05.
Table 58 Cont'd., Bivariate Correlations Among Predictors of All Eating Behavior Survey Participants (N=2625)

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*Pearson correlation coefficients are statistically significant at p<0.05.
Depression was highly intercorrelated with Anxiety (0.77), Self-Esteem (0.59), and Mentally Unhealthy Days (0.57). Because Depression was the highest correlate of Disturbed Eating Severity score (0.54) and researchers believe depression to be highly correlated with disturbed eating\textsuperscript{269, 279} compared with these other measures, Anxiety, Self-Esteem, Self-Evaluative Salience, and Mentally Unhealthy Days were excluded from the prediction model. Dichotomous Thinking was not highly intercorrelated with any of the 15 potential prediction model variables. Because eating disorder patients typically present with dichotomous thinking attitudes (i.e., cognitive distortions) its moderate correlation with Disturbed EatingSeverity score is supported\textsuperscript{11, 158}. Weight Teasing Frequency was only highly intercorrelated with Appearance Weight Control (0.54). However, Appearance Weight Control was also highly intercorrelated with Emphasis of Mother’s Weight (0.55); to eliminate the risk of multicollinearity Appearance Weight Control was excluded from the prediction model. OCD Severity was only highly intercorrelated with Anxiety (0.53), but because Anxiety was already excluded from entering the model because of its high intercorrelation with Depression, OCD Severity was included in the model. OCD behaviors also have strong associations with eating disorders\textsuperscript{280} thereby further supporting the inclusion of this variable in the prediction model. There was a somewhat elevated intercorrelation between Mealtime Communication-Based Stress and Emphasis of Mother’s Weight (0.38). It was anticipated that participants with DRCHCs might experience recalling family mealtimes being more stressful because their health condition involves dietary management\textsuperscript{281, 282}. Thus, Mealtime Communication-Based Stress was included and Emphasis of Mother’s Weight was excluded from the model. Pressures from the Media was the variable with
the second highest correlation coefficient with Disturbed Eating Severity score so it was important to include this variable in the prediction model. However, this variable was highly intercorrelated with other body image sociocultural influencer variables such as, Self-Evaluative Salience (0.64), Internalization-General (0.74), Information-Media (0.55), and Motivational Salience (0.40). For this reason, the variables highly intercorrelated with Pressures from the Media were excluded from the prediction model to avoid multicollinearity, and Pressures from the Media was placed into the prediction model as a representative variable for body image sociocultural influencers.

Of the original 15 variables, 6 variables were left to enter the prediction model with the lowest intercorrelations among the independent variables and highest correlations with Disturbed Eating Severity Score (i.e., dependent variable) (Tables 59-60). These six independent variables (Depression, Dichotomous Thinking, Weight Teasing Frequency, OCD Severity, Mealtime Communication-Based Stress, Pressures from the Media) were entered into the disturbed eating prediction model using stepwise regression procedures. Final models were carefully examined for normality and multicollinearity (i.e., variance inflation factor <2.0).
Table 59. Bivariate Correlations Among Predictors of Eating Behavior Survey Healthy Participants (N=2449)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disturbed Eating Severity</td>
<td>---</td>
<td>0.54*</td>
<td>0.28*</td>
<td>0.34*</td>
<td>0.36*</td>
<td>0.25*</td>
<td>0.49*</td>
</tr>
<tr>
<td>2. Depression</td>
<td>---</td>
<td>0.14</td>
<td>0.25*</td>
<td>0.47*</td>
<td>0.34*</td>
<td>0.28*</td>
<td></td>
</tr>
<tr>
<td>3. Dichotomous Thinking</td>
<td>---</td>
<td>0.08</td>
<td>0.09</td>
<td>0.03</td>
<td>0.24*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Weight Teasing Frequency</td>
<td>---</td>
<td>0.16</td>
<td>0.30*</td>
<td>0.21*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OCD Severity</td>
<td>---</td>
<td>0.19*</td>
<td>0.19*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mealtime Communication-Based Stress</td>
<td>---</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Pressures from the Media</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pearson correlation coefficients are statistically significant at p<0.05.
Table 60. Bivariate Correlations Among Predictors of Eating Behavior Survey Diet-Related Chronic Health Condition (DRCHC) Participants (N=166)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disturbed Eating Severity</td>
<td>---</td>
<td>0.57*</td>
<td>0.36*</td>
<td>0.33*</td>
<td>0.42*</td>
<td>0.27*</td>
<td>0.52*</td>
</tr>
<tr>
<td>2. Depression</td>
<td>---</td>
<td>0.15</td>
<td>0.32*</td>
<td>0.57*</td>
<td>0.44</td>
<td>0.18*</td>
<td></td>
</tr>
<tr>
<td>3. Dichotomous Thinking</td>
<td>---</td>
<td>0.06</td>
<td>0.13</td>
<td>0.09</td>
<td>0.28*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Weight Teasing Frequency</td>
<td>---</td>
<td></td>
<td>0.21*</td>
<td>0.32</td>
<td>0.18*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. OCD Severity*</td>
<td>---</td>
<td></td>
<td>0.33</td>
<td>0.27*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mealtime Communication-Based Stress</td>
<td>---</td>
<td></td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Pearson correlation coefficients are statistically significant at p<0.05.

#Obsessive Compulsive Severity was not entered into model due to multicollinearity with Depression.
The final predictive model for Disturbed Eating Severity for all participants, presented in Table 61, contained the following independent variables: Depression, Pressures from the Media, Weight Teasing Frequency, and Dichotomous Thinking ($R^2 = 0.46$). Mealtime Communication-Based Stress and OCD Severity were eliminated from the prediction model as there was little change in $R^2$ when these variables were introduced into the model. The prediction success of this model was assessed by randomly assigning participants to either a training or validation set and comparing the two groups’ standardized deviation residuals. The results showed that future disturbed eating predictions were precise in this model with all EBS participants as there were no large differences between the standardized residuals of the training and validation sets. These same steps were taken to find a predictive model of disturbed eating for just EBS females, EBS males, all healthy EBS participants, all EBS DRCHC, bowel-related DRCHC, type 1 diabetes DRCHC, and cystic fibrosis DRCHC participants. The final model, presented in Table 62, predictive ($R^2 = 0.46$) of Disturbed Eating Severity in EBS females contained the same independent variables as the model that included all participants. On the other hand, the final model, presented in Table 63, predictive ($R^2 = 0.42$) of Disturbed Eating Severity in EBS males contained the same independent variables as the model that included all participants, except another independent variable (i.e., Mealtime Communication-Based Stress) entered the model.

The final predictive model for just healthy EBS participants included the same independent variables as all EBS participants (Table 64) and was similar in its predictive power ($R^2 = 0.45$). Interestingly, the model, presented in Table 65, predictive ($R^2 = 0.53$) of Disturbed Eating Severity in EBS DRCHC participants contained only three
independent variables (i.e., Depression, Pressure from the Media, and Dichotomous Thinking). The prediction model for just bowel-related DRCHC participants included only two variables (i.e., Depression and Pressures from the Media) with similar predictive power as the other models ($R^2 = 0.48$) (Table 66). Exploration of disturbed eating prediction models for type 1 diabetes DRCHC participants were conducted as well; however, these results should be viewed with caution as the results introduced heteroscedasticity to the model most likely due to small sample sizes. The prediction model for type 1 diabetes DRCHC participants included the same explanatory variables as bowel-related DRCHC participants (i.e., Depression and Pressures from the Media), but with a higher predictive power ($R^2 = 0.62$) (Table 67). Unfortunately, a disturbed eating prediction model using stepwise regression for cystic fibrosis participants could not be created due to the small sample size ($n=9$).

The prediction success of the disturbed eating prediction model for all DRCHC participants also was cross-validated using the same procedures when tested for all EBS participants. The results revealed no large differences between the standardized residuals of the training or validation sets. Cross validation of bowel-related and type 1 diabetes prediction models was not possible due to small sample sizes.
Table 61. Stepwise Regression Findings for Eating Behavior Survey Participants

(n=2625)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>[</td>
</tr>
<tr>
<td>R Squared</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
</tr>
<tr>
<td>Standard Error of the Estimate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F=547.4</th>
<th>P=&lt;0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>17640.90</td>
<td>4410.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>2620</td>
<td>21107.95</td>
<td>8.06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE#</th>
<th>Standard Coefficient</th>
<th>VIF|^†</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-4.51</td>
<td>0.23</td>
<td>-4.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.31</td>
<td>0.01</td>
<td>0.39</td>
<td>1.14</td>
<td></td>
</tr>
<tr>
<td>Pressures from Media</td>
<td>1.15</td>
<td>0.06</td>
<td>0.32</td>
<td>1.16</td>
<td></td>
</tr>
<tr>
<td>Weight Teasing Frequency</td>
<td>0.59</td>
<td>0.06</td>
<td>0.16</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>Dichotomous Thinking</td>
<td>0.62</td>
<td>0.07</td>
<td>0.13</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom
\#Standard Error
\[^†^\]Variance Inflation Factor
Table 62. Stepwise Regression Findings for Eating Behavior Survey Female Participants (n=1666)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>[F]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F=357.02; P=&lt;0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>12790.38</td>
<td>3197.60</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>1661</td>
<td>14877.66</td>
<td>8.96</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE*</th>
<th>Standard Coefficient</th>
<th>VIF†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-5.30</td>
<td>0.32</td>
<td>-5.30</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.33</td>
<td>0.01</td>
<td>0.40</td>
<td>1.14</td>
</tr>
<tr>
<td>Pressures from Media</td>
<td>1.23</td>
<td>0.08</td>
<td>0.31</td>
<td>1.17</td>
</tr>
<tr>
<td>Dichotomous Thinking</td>
<td>0.79</td>
<td>0.09</td>
<td>0.16</td>
<td>1.09</td>
</tr>
<tr>
<td>Weight Teasing Frequency</td>
<td>0.58</td>
<td>0.08</td>
<td>0.14</td>
<td>1.12</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom
*SE=Standard Error
†VIF=Variance Inflation Factor
Table 63. Stepwise Regression Findings for Eating Behavior Survey Male Participants (n=959)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>$F=135.28; \ p&lt;0.001$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>5</td>
<td>4104.11</td>
<td>820.82</td>
</tr>
<tr>
<td>Residual</td>
<td>953</td>
<td>5782.31</td>
<td>6.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE*</th>
<th>Standard Coefficient</th>
<th>VIF†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.67</td>
<td>0.36</td>
<td>-3.67</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.24</td>
<td>0.02</td>
<td>0.36</td>
<td>1.25</td>
</tr>
<tr>
<td>Pressure from Media</td>
<td>0.77</td>
<td>0.09</td>
<td>0.22</td>
<td>1.17</td>
</tr>
<tr>
<td>Weight Teasing Frequency</td>
<td>0.59</td>
<td>0.08</td>
<td>0.20</td>
<td>1.15</td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress</td>
<td>0.61</td>
<td>0.14</td>
<td>0.12</td>
<td>1.23</td>
</tr>
<tr>
<td>Dichotomous Thinking</td>
<td>0.34</td>
<td>0.09</td>
<td>0.09</td>
<td>1.03</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom  
*Standard Error  
†Variance Inflation Factor
Table 64. Stepwise Regression Findings for Eating Behavior Survey Healthy Participants (n=2449)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
</tr>
<tr>
<td>R Squared 0.45</td>
</tr>
<tr>
<td>Adjusted R Squared 0.45</td>
</tr>
<tr>
<td>SE of the Estimate 2.84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F=495.10; P=&lt;0.001</th>
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<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>15959.66</td>
<td>3989.91</td>
</tr>
<tr>
<td>Residual</td>
<td>2444</td>
<td>19695.78</td>
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<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE#</th>
<th>Standardized Coefficient</th>
<th>VIF†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-4.42</td>
<td>0.24</td>
<td>-4.42</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.30</td>
<td>0.01</td>
<td>0.39</td>
<td>1.14</td>
</tr>
<tr>
<td>Pressures from Media</td>
<td>1.13</td>
<td>0.06</td>
<td>0.31</td>
<td>1.16</td>
</tr>
<tr>
<td>Weight Teasing Frequency</td>
<td>0.60</td>
<td>0.06</td>
<td>0.16</td>
<td>1.09</td>
</tr>
<tr>
<td>Dichotomous Thinking</td>
<td>0.60</td>
<td>0.07</td>
<td>0.13</td>
<td>1.07</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom
#Standard Error
†Variance Inflation Factor
### Table 65. Stepwise Regression Findings for Eating Behavior Survey Diet-Related Chronic Health Condition (DRCHC) Participants (n=166)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>[R]</td>
</tr>
<tr>
<td>R Squared</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
</tr>
<tr>
<td>Standard Error of the Estimate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F=61.36; P=&lt;0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>3</td>
<td>1518.31</td>
<td>506.10</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>162</td>
<td>1336.20</td>
<td>8.25</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE#</th>
<th>Standard Coefficient</th>
<th>VIF†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-5.72</td>
<td>0.91</td>
<td>-5.72</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.36</td>
<td>0.04</td>
<td>0.48</td>
<td>1.04</td>
</tr>
<tr>
<td>Pressure from Media</td>
<td>1.47</td>
<td>0.22</td>
<td>0.38</td>
<td>1.11</td>
</tr>
<tr>
<td>Dichotomous Thinking</td>
<td>0.91</td>
<td>0.29</td>
<td>0.18</td>
<td>1.10</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom  
#Standard Error  
†Variance Inflation Factor
Table 66. Stepwise Regression Findings for Eating Behavior Survey Bowel-Related Diet-Related Chronic Health Condition (DRCHC) Participants (n=135)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
</tr>
<tr>
<td>R Squared</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
</tr>
<tr>
<td>Standard Error of the Estimate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F=62.70; P=&lt;0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2</td>
<td>992.80</td>
<td>496.40</td>
</tr>
<tr>
<td>Residual</td>
<td>132</td>
<td>1052.96</td>
<td>7.92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE#</th>
<th>Standard Coefficient</th>
<th>VIF†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.65</td>
<td>0.79</td>
<td>-3.65</td>
<td>1.04</td>
</tr>
<tr>
<td>Depression</td>
<td>0.32</td>
<td>0.04</td>
<td>0.46</td>
<td>1.04</td>
</tr>
<tr>
<td>Pressure from Media</td>
<td>1.59</td>
<td>0.23</td>
<td>0.45</td>
<td>1.04</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom
#Standard Error
†Variance Inflation Factor
### Table 67. Stepwise Regression Findings for Eating Behavior Survey Type 1 Diabetes (DRCHC) Participants (n=21)

<table>
<thead>
<tr>
<th>Dependent Variable: Disturbed Eating Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R$</td>
</tr>
<tr>
<td>R Squared</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
</tr>
<tr>
<td>Standard Error of the Estimate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DF*</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>$F=18.06$; $P=&lt;0.001$</th>
</tr>
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<td>158.90</td>
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</tr>
<tr>
<td>Residual</td>
<td>19</td>
<td>167.15</td>
<td>8.80</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables In Model</th>
<th>Unstandardized Coefficient</th>
<th>SE$^#$</th>
<th>Standard Coefficient</th>
<th>VIF$^\dagger$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-6.28</td>
<td>2.38</td>
<td>-6.28</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.53</td>
<td>0.11</td>
<td>0.65</td>
<td>1.01</td>
</tr>
<tr>
<td>Pressure from Media</td>
<td>2.14</td>
<td>0.68</td>
<td>0.42</td>
<td>1.01</td>
</tr>
</tbody>
</table>

*DF=Degrees of Freedom
$^\#$Standard Error
$^\dagger$Variance Inflation Factor
COMPARISONS OF YOUNG ADULTS WITH AND WITHOUT DRCHC

To comprehensively examine the demographic and psychographic characteristics associated with disturbed eating behaviors in young adults with and without DRCHC, a 1:4 matched case-control study design was used. This design was used to address Research Question 2: Do young adults with DRCHCs differ from those without DRCHCs with regard to demographic and psychographic characteristics, and presence and degree of disturbed eating behaviors? That is, each participant with a DRCHC (case) was matched by gender and BMI (±0.50 BMI units) to four healthy participants (i.e., participants without a DRCHC). Matching helped to control for confounding factors (i.e., gender and BMI) and increase the power of the study by reducing the variance of the estimated disease-exposure odds ratio (OR). Matching of all case (i.e., type 1 diabetes, celiac, cystic fibrosis, inflammatory bowel disease, irritable bowel syndrome) and control participants was done in Microsoft Excel. During the process of matching participants, each case was matched and labeled (i.e., Case-Control & Set) with 4 control participants who had the same gender and a BMI within ±0.50 BMI units of each case. Two DRCHC participants could not be matched within ±0.50 BMI to 4 control participants because of their elevated BMIs (i.e., 35 and 43), so they were excluded from further analyses.

Conditional logistic regression was used to determine whether demographic and psychographic characteristics were related to disturbed eating severity differed in young adults with and without DRCHCs. Because many DRCHC participants had a bowel disease (i.e., celiac disease, inflammatory bowel, irritable bowel syndrome; n=135; 82%), additional conditional logistic regression analyses were performed with matched case-
control bowel-related DRCHC participants. Further analyses also were performed for type 1 diabetes and cystic fibrosis DRCHC matched case-control participants, but should be viewed with caution, as there were a relatively small number of participants with these conditions. Conditional logistic regression was used for analyses because it takes into consideration the matched design (i.e., the intercept and regression coefficients are conditioned on matching variables). In the case of multivariate analyses the intercept and coefficients are considered adjusted both for the variables included in the model and for the matching variables\(^{271}\). The results from these analyses are described below.

**All Matched Case-Control Study Participants**

**Demographic Characteristics.** Matching was successful as can be seen in Table 68. Results of the conditional logistic regression analyses showed an association between having a DRCHC and the following characteristics: Family History of Health Conditions, Race, Age, Current Health Status, Health Insurance Now, Bowel Movement Characteristics and the Number of Bowel Movement Characteristic Irregularities, and Following a Special Diet Regimen. Thus, participants with a DRCHC were almost 3 times as likely (OR=2.85) to have a family member with a DRCHC, 5 times more likely to be White (OR=4.77), significantly older (OR=1.42), and twice as likely to be currently insured as controls (Tables 69 to 71). They were 4 to 5 times more likely to have recently (within the past 3 months) experienced bowel movement irregularities and significantly more likely (OR=6.84) to follow a special diet regimen (Tables 71 and 72). Additionally, participants with a DRCHC had a two-fold increase (90% confidence interval) in having been diagnosed with an eating disorder by a healthcare provider (see
Table 69). As might be expected, cases perceived themselves as having significantly
derior health status than controls (see Table 71). There were no significant differences in
DRCHC matched case-control participants on any other demographic characteristics (i.e.,
Family History of an Eating Disorder, BMI, Weight Status, Health Insurance When
Growing Up, and Puberty Marker).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Case Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Diagnosis of a Diet-Related Chronic Health Condition by a Health Care Provider</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>20 (12)</td>
<td>14 (11)</td>
<td>6 (16)</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>36 (22)</td>
<td>32 (25)</td>
<td>4 (11)</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>9 (6)</td>
<td>8 (6)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Inflammatory Bowel Diseases</td>
<td>30 (19)</td>
<td>17 (14)</td>
<td>13 (35)</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>90 (55)</td>
<td>71 (56)</td>
<td>19 (50)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index Category (Wt [kg]/Ht [m²])</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>13 (8)</td>
<td>12 (10)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>121 (74)</td>
<td>94 (75)</td>
<td>27 (71)</td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>21 (13)</td>
<td>13 (10)</td>
<td>8 (21)</td>
</tr>
<tr>
<td>Obese (BMI &gt;30)</td>
<td>9 (6)</td>
<td>7 (6)</td>
<td>2 (5)</td>
</tr>
<tr>
<td>Body Mass Index (Wt [kg]/Ht [m²])</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>22.64±3.64</td>
<td>22.33±3.78</td>
<td>23.66±2.96</td>
<td>22.63±3.63</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#SD=Standard Deviation
Table 69. Frequencies, ORs and CIs of Health History Characteristics Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>All (N=656)</td>
<td>All (N=152)</td>
</tr>
<tr>
<td></td>
<td>Females (N=126)</td>
<td>Females (N=504)</td>
<td>Females (N=152)</td>
</tr>
<tr>
<td></td>
<td>Males (N=38)</td>
<td>Males (N=152)</td>
<td>Males (N=152)</td>
</tr>
<tr>
<td>Diagnosis of an Eating Disorder by a Health</td>
<td>10 (6)</td>
<td>21 (3)</td>
<td>1.99</td>
</tr>
<tr>
<td>Care Provider</td>
<td>9 (7)</td>
<td>20 (4)</td>
<td>0.91-4.34</td>
</tr>
<tr>
<td>Family History of these Health Conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Diet-Related Chronic Health Condition</td>
<td>93 (57)</td>
<td>200 (31)</td>
<td>2.85</td>
</tr>
<tr>
<td></td>
<td>68 (54)</td>
<td>153 (30)</td>
<td>2.01-4.03</td>
</tr>
<tr>
<td></td>
<td>25 (66)</td>
<td>47 (31)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>16 (10)</td>
<td>46 (7)</td>
<td>1.43</td>
</tr>
<tr>
<td></td>
<td>8 (6)</td>
<td>28 (6)</td>
<td>0.79-2.60</td>
</tr>
<tr>
<td></td>
<td>8 (21)</td>
<td>18 (12)</td>
<td>0.238</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>24 (15)</td>
<td>82 (13)</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>18 (14)</td>
<td>56 (11)</td>
<td>0.74-1.94</td>
</tr>
<tr>
<td></td>
<td>6 (16)</td>
<td>26 (17)</td>
<td>0.472</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>9 (6)</td>
<td>4 (0.6)</td>
<td>9.00</td>
</tr>
<tr>
<td></td>
<td>7 (6)</td>
<td>3 (0.6)</td>
<td>2.28-29.23</td>
</tr>
<tr>
<td></td>
<td>2 (5)</td>
<td>1 (1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>2 (1)</td>
<td>3 (0.5)</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>1 (1)</td>
<td>3 (0.5)</td>
<td>0.45-15.96</td>
</tr>
<tr>
<td></td>
<td>1 (3)</td>
<td>0 (0)</td>
<td>0.283</td>
</tr>
<tr>
<td>Inflammatory Bowel Diseases</td>
<td>14 (9)</td>
<td>13 (2)</td>
<td>4.00</td>
</tr>
<tr>
<td></td>
<td>8 (5)</td>
<td>12 (2)</td>
<td>1.80-8.90</td>
</tr>
<tr>
<td></td>
<td>6 (16)</td>
<td>1 (1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>44 (27)</td>
<td>18 (3)</td>
<td>12.68</td>
</tr>
<tr>
<td></td>
<td>33 (26)</td>
<td>16 (3)</td>
<td>6.81-23.60</td>
</tr>
<tr>
<td></td>
<td>11 (29)</td>
<td>2 (1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Family History with Eating Disorders</td>
<td>48 (27)</td>
<td>21 (3)</td>
<td>1.57</td>
</tr>
<tr>
<td></td>
<td>5 (4)</td>
<td>3 (2)</td>
<td>0.67-3.64</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

*Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

*OR=Odds Ratio; CI=Confidence Interval

*Significant difference using a 90% CI [1.03-3.83]
Table 70. Frequencies, ORs and CIs of Characteristics Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>141 (86)</td>
<td>110 (87)</td>
<td>30 (79)</td>
</tr>
<tr>
<td>Non-White</td>
<td>23 (14)</td>
<td>16 (13)</td>
<td>8 (21)</td>
</tr>
<tr>
<td>Weight Remained Stable over Past Month (± 1 to 2 pounds of usual weight)</td>
<td>105 (64)</td>
<td>81 (64)</td>
<td>24 (63)</td>
</tr>
<tr>
<td>Weight Change was Intentional‡</td>
<td>19 (46)</td>
<td>14 (42)</td>
<td>5 (63)</td>
</tr>
<tr>
<td>Had Health Insurance When Growing Up¥</td>
<td>152 (93)</td>
<td>116 (92)</td>
<td>36 (95)</td>
</tr>
<tr>
<td>Has Health Insurance Now</td>
<td>154 (94)</td>
<td>118 (94)</td>
<td>36 (95)</td>
</tr>
<tr>
<td>Special Diet Regimen Followed</td>
<td>86 (52)</td>
<td>70 (56)</td>
<td>16 (42)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval

‡N=41 DRCHC participants (n=33 females and n=8 males) and N=93 Healthy participants (n=74 females and n=19 males) for only participants who reported Weight Change as Intentional.

¥N=162 DRCHC participants (n=124 females and n=38 males) and N=630 Healthy participants (n=490 females and n=140 males) because participants reported they were unsure.
Table 71. Means, ORs and CIs of Characteristics Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164) Mean±SD†</td>
<td>Females (N=126) Mean±SD‡</td>
<td>Males (N=38) Mean±SD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All (N=656) Mean±SD†</td>
<td>Females (N=504) Mean±SD‡</td>
<td>Males (N=152) Mean±SD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>#</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>20.77±2.21</td>
<td>21.00±2.28</td>
<td>20.03±1.79</td>
</tr>
<tr>
<td></td>
<td>19.71±1.45</td>
<td>19.73±1.46</td>
<td>19.63±1.42</td>
</tr>
<tr>
<td></td>
<td>1.42</td>
<td>1.28-1.57</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Puberty Marker (age)‡</td>
<td>11.18±1.69</td>
<td>11.04±1.62</td>
<td>11.64±1.88</td>
</tr>
<tr>
<td></td>
<td>11.17±1.65</td>
<td>11.02±1.66</td>
<td>11.69±1.52</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>0.90-1.12</td>
<td>0.97</td>
</tr>
<tr>
<td>Current Health Status (1 to 5)¥</td>
<td>3.36±0.92</td>
<td>3.31±0.92</td>
<td>3.56±0.88</td>
</tr>
<tr>
<td></td>
<td>3.64±0.89</td>
<td>3.59±0.87</td>
<td>3.81±0.93</td>
</tr>
<tr>
<td></td>
<td>0.71</td>
<td>0.58-0.86</td>
<td>0.001</td>
</tr>
<tr>
<td>Total # of Bowel Irregularities (0-3)§</td>
<td>1.00±1.08</td>
<td>0.92±1.05</td>
<td>1.26±1.16</td>
</tr>
<tr>
<td></td>
<td>0.82±1.01</td>
<td>0.79±0.99</td>
<td>0.94±1.05</td>
</tr>
<tr>
<td></td>
<td>1.17</td>
<td>1.00-1.38</td>
<td>0.052§</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

‡Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.

§Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent).

§Closely approaches statistical significance at the 0.05 level.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;‡&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that was relieved by having a bowel movement?</td>
<td>125 (76)</td>
<td>95 (75)</td>
<td>30 (79)</td>
</tr>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that led to changes in the frequency of bowel movements?</td>
<td>89 (54)</td>
<td>71 (56)</td>
<td>18 (47)</td>
</tr>
<tr>
<td>During the past 3 months or longer appearance of bowel movements changed?</td>
<td>71 (43)</td>
<td>55 (44)</td>
<td>16 (42)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

<sup>#</sup>Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

<sup>‡</sup>OR=Odds Ratio; CI=Confidence Interval
**Psychographic Characteristics of All DRCHC Matched Case-Control Study**

**Participants.** Conditional logistic regression analysis revealed an association with having a DRCHC and the following psychographic characteristics: Inappropriate Compensatory Behaviors (i.e., Excessive Exercise, Medicine Misuse), Weight Teasing History and Upset Level from Weight Teasing, Total Number and Types of Weight Teasing Insults, Body Image Media Pressures (i.e., Information from the Media), Depression, Anxiety, Mentally and Physically Unhealthy Days, Health Value, Avoidant Coping, Mealtime Structure, and Emphasis on Mother’s Weight. Thus, participants with a DRCHC were significantly more likely to exercise excessively as a means to control their weight and had a 41 percent greater tendency to misuse medicine to control their weight (Table 73). While not statistically significant, fewer DRCHC participants tended to perceive themselves as average in weight in 6th grade. However, significantly more DRCHC cases considered themselves thin or very thin in 10th grade (OR=1.54), and their average recalled weight in the 10th grade was significantly lower than controls. All other self-reported Body Weight Perception Scores at various time points in their lives tended not to be significantly different between the case and control groups (Tables 74 and 75).

Participants with a DRCHC were significantly (>50%) more likely than healthy participants to have been weight teased as a child with the weight teasing insults (i.e., being made fun of and/or laughed at because of weight) causing more upset (Tables 75 and 76). Controls were significantly more likely to use Internet websites that were body image intense (Table 77); however, caution should be used when interpreting this result because the numbers were small. DRCHC participants also were 19 percent less likely to report feeling pressure from the media to maintain a particular body image (OR=0.81;
Table 76). DRCHC participants, compared to controls, had significantly higher depression and anxiety severity scores (4%; Table 76) and more mentally and physically unhealthy days (OR=1.02 and 1.06; respectively; Table 79). In addition, DRCHC participants placed a greater value on their health (OR=1.54), were more likely to use avoidant coping skills (OR=1.18), and recalled that during childhood a greater emphasis being placed on their mothers’ weights (OR=1.25), along with mealtimes being less structured (OR=0.74) than control participants (see Tables 79 and 80). The frequency of participants with a DRCHC was significantly (40%) greater (90% confidence interval) in the ‘disturbed’ eating score than controls (Table 81). The frequency of cases and controls did not differ with regard to all other Disturbed Eating Severity categories (i.e., non-disturbed, mildly disturbed, highly disturbed) (see Table 81).

Other psychographic characteristics not found to be significantly different in DRCHC matched case-control participants were: Eating, Shape, and Weight Concerns, Restraint, Global EDE-Q Score, Binge Eating, Self-Induced Vomiting, Emotional Eating, Disinhibited Eating, Night Eating Severity, Self-Evaluative Salience, Motivational Salience, Body Image Distortion (see Tables 73 and 74), Pressures from Media, Internalization of Media Messages, OCD severity (see Table 76), and Use of Body Image Intense Media (Tables 77 and 78).
### Table 7: Means ORs and CI of Eating Behavior Scores Between Those With and Without DCHEC

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Healthy Parent (Control)</th>
<th>DCHEC Participant (Case)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>95% CI</td>
<td>1.16 (95%CI: 0.70-1.96)</td>
<td>1.07 (95%CI: 0.70-1.64)</td>
<td>0.51</td>
</tr>
<tr>
<td>Mean±SD</td>
<td>1.94±0.94</td>
<td>1.64±0.84</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.04</td>
<td>0.02</td>
<td></td>
</tr>
</tbody>
</table>

### Table 8: Conditional Logistic Regression Results (1:10) on Gender and Body Mass Index (within = 0.50 units; Statistical comparisons are between all cases and controls)

<table>
<thead>
<tr>
<th>Three-Factor Questionnaire</th>
<th>OR (95%CI)</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diminished Function (1:10)</td>
<td>2.02</td>
<td>0.92-4.44</td>
<td>0.10</td>
</tr>
<tr>
<td>Diminished Function (1:10)</td>
<td>2.10</td>
<td>0.70-6.55</td>
<td>0.22</td>
</tr>
<tr>
<td>Physical Fatigue (1:10)</td>
<td>2.04</td>
<td>0.70-6.25</td>
<td>0.22</td>
</tr>
<tr>
<td>Emotional Fatigue (1:10)</td>
<td>2.10</td>
<td>0.70-6.25</td>
<td>0.22</td>
</tr>
<tr>
<td>CQG Fatigue Questionnaire (0:6)</td>
<td>1.98</td>
<td>0.92-4.32</td>
<td>0.08</td>
</tr>
<tr>
<td>CQG Fatigue Questionnaire (0:6)</td>
<td>1.96</td>
<td>0.92-4.32</td>
<td>0.08</td>
</tr>
<tr>
<td>Exhaustive Function (0:6)</td>
<td>0.82</td>
<td>0.33-2.02</td>
<td>0.71</td>
</tr>
<tr>
<td>Exhaustive Function (0:6)</td>
<td>0.82</td>
<td>0.33-2.02</td>
<td>0.71</td>
</tr>
<tr>
<td>Medical Disease (0:6)</td>
<td>0.98</td>
<td>0.70-1.42</td>
<td>0.87</td>
</tr>
<tr>
<td>Medical Disease (0:6)</td>
<td>0.98</td>
<td>0.70-1.42</td>
<td>0.87</td>
</tr>
<tr>
<td>Heavy Intake Questionnaire (0:6)</td>
<td>0.99</td>
<td>0.70-1.44</td>
<td>0.87</td>
</tr>
<tr>
<td>Heavy Intake Questionnaire (0:6)</td>
<td>0.99</td>
<td>0.70-1.44</td>
<td>0.87</td>
</tr>
<tr>
<td>Impoverished Complementary Education Score</td>
<td>0.46</td>
<td>0.13-1.49</td>
<td>0.27</td>
</tr>
<tr>
<td>Impoverished Complementary Education Score</td>
<td>0.46</td>
<td>0.13-1.49</td>
<td>0.27</td>
</tr>
<tr>
<td>Bridge Easing (0:25)</td>
<td>1.99</td>
<td>0.92-4.27</td>
<td>0.08</td>
</tr>
<tr>
<td>Bridge Easing (0:25)</td>
<td>1.99</td>
<td>0.92-4.27</td>
<td>0.08</td>
</tr>
<tr>
<td>Parenting (0:6)</td>
<td>1.92</td>
<td>0.70-5.18</td>
<td>0.22</td>
</tr>
<tr>
<td>Parenting (0:6)</td>
<td>1.92</td>
<td>0.70-5.18</td>
<td>0.22</td>
</tr>
<tr>
<td>Parenting Concerns (0:6)</td>
<td>1.92</td>
<td>0.70-5.18</td>
<td>0.22</td>
</tr>
<tr>
<td>Parenting Concerns (0:6)</td>
<td>1.92</td>
<td>0.70-5.18</td>
<td>0.22</td>
</tr>
</tbody>
</table>
Table 74. Means, ORs and CIs of Shape and Weight Concerns, Physical Appearance, Body Image Distortion, and Perception of Body Weight Scores Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD†</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Eating Disorder Examination Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape Concerns (0 to 6)</td>
<td>2.26±1.67</td>
<td>2.41±1.71</td>
<td>1.74±1.43</td>
</tr>
<tr>
<td>Weight Concerns (0 to 6)</td>
<td>1.85±1.60</td>
<td>1.98±1.68</td>
<td>1.41±1.23</td>
</tr>
<tr>
<td>Appearance Schema Inventory-Revised</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>3.25±0.77</td>
<td>3.25±0.79</td>
<td>3.25±0.70</td>
</tr>
<tr>
<td>Motivational Salience (1 to 5)</td>
<td>3.57±0.67</td>
<td>3.54±0.66</td>
<td>3.68±0.71</td>
</tr>
<tr>
<td>Body Image Distortion (-2 to 2)‡</td>
<td>0.84±0.65</td>
<td>0.89±0.66</td>
<td>0.66±0.58</td>
</tr>
<tr>
<td>Weight in 1st grade (1 to 3)</td>
<td>1.52±0.66</td>
<td>1.57±0.67</td>
<td>1.37±0.59</td>
</tr>
<tr>
<td>Weight in 6th grade (1 to 3)</td>
<td>1.80±0.82</td>
<td>1.87±0.82</td>
<td>1.58±0.79</td>
</tr>
<tr>
<td>Weight in 10th grade (1 to 3)</td>
<td>1.69±0.71</td>
<td>1.72±0.71</td>
<td>1.58±0.72</td>
</tr>
<tr>
<td>Current Weight (1 to 3)</td>
<td>1.96±0.69</td>
<td>1.12±1.22</td>
<td>1.92±0.75</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
Defined as perceived body weight score minus actual body weight category. Means closer to zero indicate body weight is perceived accurately. Positive values indicate that individuals perceived they were heavier than they actually were whereas negative values indicate that individuals perceived they weighed less than they actually did.

Indicate changes of Mean Perceptions of Body Weight between time periods in columns.
Table 75. Frequencies, ORs and CIs of Perceptions of Body Weight Over Time & Weight Teasing Frequency Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td>Weight in 1st grade (about age 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>93 (57)</td>
<td>67 (53)</td>
<td>26 (68)</td>
</tr>
<tr>
<td>Average</td>
<td>56 (34)</td>
<td>46 (37)</td>
<td>10 (26)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>15 (9)</td>
<td>13 (10)</td>
<td>2 (5)</td>
</tr>
<tr>
<td>Weight in 6th grade (about age 12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>75 (46)</td>
<td>52 (41)</td>
<td>23 (61)</td>
</tr>
<tr>
<td>Average</td>
<td>47 (29)</td>
<td>39 (31)</td>
<td>8 (21)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>42 (26)</td>
<td>35 (28)</td>
<td>7 (18)</td>
</tr>
<tr>
<td>Weight in 10th grade (about age 16)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>75 (46)</td>
<td>54 (42)</td>
<td>21 (55)</td>
</tr>
<tr>
<td>Average</td>
<td>65 (40)</td>
<td>53 (41)</td>
<td>12 (32)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>24 (15)</td>
<td>21 (16)</td>
<td>5 (13)</td>
</tr>
<tr>
<td>Current Weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>43 (26)</td>
<td>31 (24)</td>
<td>12 (32)</td>
</tr>
<tr>
<td>Average</td>
<td>85 (52)</td>
<td>68 (54)</td>
<td>17 (45)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>36 (22)</td>
<td>27 (21)</td>
<td>9 (24)</td>
</tr>
</tbody>
</table>

Perception of Teasing Scale

<table>
<thead>
<tr>
<th>Types of Weight Teasing</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made Fun of Because of Weight</td>
<td>82 (50)</td>
<td>66 (52)</td>
<td>16 (42)</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>55 (34)</td>
<td>44 (35)</td>
<td>11 (29)</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>41 (25)</td>
<td>31 (25)</td>
<td>10 (26)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.
†OR=Odds Ratio; CI=Confidence Interval
Table 76. Means, ORs and CIs of Weight Teasing History, Body Image Media Pressures, & Psychological Characteristic Scores Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD †</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)</td>
<td>1.80±1.11</td>
<td>1.76±1.02</td>
<td>1.78±1.20</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)</td>
<td>3.60±1.23</td>
<td>3.75±1.21</td>
<td>3.01±1.16</td>
</tr>
<tr>
<td>Total Number of Types of Weight Teasing Insults (0-3)</td>
<td>1.09±1.22</td>
<td>1.12±1.22</td>
<td>0.97±1.24</td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>3.23±1.08</td>
<td>3.35±1.11</td>
<td>2.86±0.87</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>3.15±1.29</td>
<td>3.16±1.32</td>
<td>3.11±1.20</td>
</tr>
<tr>
<td>Information-Media (1 to 5)</td>
<td>2.80±0.90</td>
<td>2.86±0.92</td>
<td>2.59±0.82</td>
</tr>
<tr>
<td>Patient Health Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td>6.91±5.48</td>
<td>6.88±5.47</td>
<td>7.00±5.56</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder Anxiety (0 to 21)</td>
<td>6.81±5.47</td>
<td>7.02±5.53</td>
<td>6.13±5.31</td>
</tr>
<tr>
<td>Florida Obsessive Compulsive Inventory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder Severity (0 to 20)</td>
<td>6.25±3.81</td>
<td>6.24±3.77</td>
<td>6.26±4.05</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

† Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

‡ OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

†N=84 DRCHC participants (n=67 females and n=17 males) and N=269 Healthy participants (n=211 females and n=58 males) for those who were weight teased.

‡N=85 DRCHC participants (n=66 females and n=19 males) and N=314 Healthy participants (n=262 females and n=52 males) for only those who reported OCD type behaviors.
Table 77. Frequencies, ORs and CIs with Use of Body Image Intense Media Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants ⁹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38) 1:4</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Number of Favorite TV Programs that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>30 (18)</td>
<td>27 (21)</td>
<td>3 (8)</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>8 (5)</td>
<td>8 (6)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Number of Favorite Magazines that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>53 (32)</td>
<td>45 (36)</td>
<td>8 (21)</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>40 (24)</td>
<td>36 (29)</td>
<td>4 (11)</td>
</tr>
<tr>
<td>Number of Favorite Websites that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>127 (77)</td>
<td>107 (85)</td>
<td>20 (53)</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>3 (2)</td>
<td>2 (2)</td>
<td>1 (3)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

⁹Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

⁵OR=Odds Ratio; CI=Confidence Interval
Table 78. Means, ORs and CIs of Body Image Intense Media Viewing Scores Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164) Mean±SD†</td>
<td>Females (N=126) Mean±SD</td>
<td>Males (N=38) Mean±SD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Image Intense TV Viewing (0 to 2)</td>
<td>0.28±0.55</td>
<td>0.34±0.60</td>
<td>0.08±0.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.27±0.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.33±0.55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.07±0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.74-1.47</td>
</tr>
<tr>
<td>Body Image Intense Magazine Viewing (0 to 2)</td>
<td>0.81±0.80</td>
<td>0.93±0.80</td>
<td>0.42±0.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.91±0.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.08±0.82</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.34±0.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.67-1.05</td>
</tr>
<tr>
<td>Body Image Intense Website Viewing (0 to 2)</td>
<td>0.81±0.44</td>
<td>0.88±0.37</td>
<td>0.58±0.55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.87±0.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.93±0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.67±0.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.55-1.11</td>
</tr>
<tr>
<td>Total Body Image Intense Media Score (0 to 6)</td>
<td>1.90±1.28</td>
<td>2.15±1.26</td>
<td>1.08±1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.05±1.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.34±1.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.07±0.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.77-1.04</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

‡Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
Table 79. Means, ORs and CIs of Intrapersonal Behavior Characteristics & Disturbed Eating Severity Score Between Those With and Without DRCHCs*  

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164) ** Mean±SD †</td>
<td>Females (N=126) ** Mean±SD</td>
<td>Males (N=38) ** Mean±SD</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem (1 to 5)</td>
<td>3.62±0.95</td>
<td>3.58±0.95</td>
<td>3.78±0.94</td>
</tr>
<tr>
<td>Health Value (1 to 5)</td>
<td>3.48±0.75</td>
<td>3.52±0.76</td>
<td>3.36±0.72</td>
</tr>
<tr>
<td>Center for Disease Control-Quality of Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentally Unhealthy Days (0 to 30)</td>
<td>8.26±9.14</td>
<td>8.79±9.37</td>
<td>6.47±8.21</td>
</tr>
<tr>
<td>Physically Unhealthy Days (0 to 30)</td>
<td>6.01±8.08</td>
<td>6.54±8.35</td>
<td>4.24±6.91</td>
</tr>
<tr>
<td>Coping Inventory for Stressful Situations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task-Oriented Coping (1 to 5)</td>
<td>4.01±0.72</td>
<td>4.01±0.71</td>
<td>3.98±0.78</td>
</tr>
<tr>
<td>Emotion-Oriented Coping (1 to 5)</td>
<td>2.85±1.04</td>
<td>2.84±1.02</td>
<td>2.89±1.12</td>
</tr>
<tr>
<td>Avoidant Coping (1 to 5)</td>
<td>3.52±1.24</td>
<td>3.68±1.22</td>
<td>3.00±1.21</td>
</tr>
<tr>
<td>Dichotomous Thinking in Eating Disorders Scale‡</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichotomous Eating Scale (1 to 4)</td>
<td>2.86±0.69</td>
<td>2.87±0.66</td>
<td>2.84±0.83</td>
</tr>
<tr>
<td>Wong &amp; Law Emotional Intelligence Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation of Emotion (7 to 28)</td>
<td>20.45±4.88</td>
<td>20.29±4.79</td>
<td>21.00±5.21</td>
</tr>
<tr>
<td>Disturbed Eating Severity Score (0-18)</td>
<td>3.85±4.10</td>
<td>4.03±4.23</td>
<td>1.31±0.95</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition  
#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.  
†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation  
‡N=72 DRCHC participants (n=58 females and n=14 males) and N=238 Healthy participants (n=204 females and n=34 males) for only those who reported dieting.
### Table 80. Means, ORs and CIs of Family and Social Environment Characteristics Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All (N=164) Mean±SD</th>
<th>Females (N=126) Mean±SD</th>
<th>Males (N=38) Mean±SD</th>
<th>All (N=656) Mean±SD</th>
<th>Females (N=504) Mean±SD</th>
<th>Males (N=152) Mean±SD</th>
<th>OR † 95% CI ‡</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Childhood Family Mealtime Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.67±0.69</td>
<td>1.68±0.72</td>
<td>1.65±0.57</td>
<td>1.62±0.61</td>
<td>1.59±0.61</td>
<td>1.69±0.62</td>
<td>1.17</td>
<td>0.89-1.53</td>
</tr>
<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>2.94±1.02</td>
<td>2.81±1.03</td>
<td>3.39±0.89</td>
<td>3.27±1.07</td>
<td>3.20±1.10</td>
<td>3.50±0.94</td>
<td>0.74</td>
<td>0.63-0.88</td>
</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>1.99±0.90</td>
<td>2.06±0.90</td>
<td>1.76±0.86</td>
<td>1.92±0.93</td>
<td>1.96±0.96</td>
<td>1.77±0.82</td>
<td>1.10</td>
<td>0.90-1.33</td>
</tr>
<tr>
<td>Emphasis on Mother's Weight (1 to 5)</td>
<td>2.14±0.91</td>
<td>2.13±0.94</td>
<td>2.18±0.82</td>
<td>1.97±0.87</td>
<td>2.01±0.90</td>
<td>1.83±0.73</td>
<td>1.25</td>
<td>1.03-1.51</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition  
Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.  
†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
Table 81. Frequencies, ORs and CIs of Disturbed Eating Severity Categories Between Those With and Without DRCHCs*

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Categories ‡</th>
<th>DRCHC Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=164)</td>
<td>Females (N=126)</td>
<td>Males (N=38)</td>
</tr>
<tr>
<td></td>
<td>Females (N=656)</td>
<td>Females (N=504)</td>
<td>Males (N=152)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>49 (30)</td>
<td>37 (29)</td>
<td>12 (32)</td>
</tr>
<tr>
<td></td>
<td>179 (27)</td>
<td>120 (24)</td>
<td>59 (39)</td>
</tr>
<tr>
<td></td>
<td>0.68</td>
<td>0.46-1.01</td>
<td>0.458</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>55 (34)</td>
<td>41 (33)</td>
<td>14 (37)</td>
</tr>
<tr>
<td></td>
<td>264 (40)</td>
<td>195 (39)</td>
<td>69 (46)</td>
</tr>
<tr>
<td></td>
<td>1.03</td>
<td>0.72-1.46</td>
<td>0.885</td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>38 (23)</td>
<td>29 (23)</td>
<td>9 (24)</td>
</tr>
<tr>
<td></td>
<td>139 (21)</td>
<td>117 (23)</td>
<td>22 (15)</td>
</tr>
<tr>
<td></td>
<td>1.41</td>
<td>0.94-2.13</td>
<td>0.101 ‡</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>22 (13)</td>
<td>19 (15)</td>
<td>3 (8)</td>
</tr>
<tr>
<td></td>
<td>74 (11)</td>
<td>72 (14)</td>
<td>2 (1)</td>
</tr>
<tr>
<td></td>
<td>1.16</td>
<td>0.62-2.18</td>
<td>0.642</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.
†OR=Odds Ratio; CI=Confidence Interval
‡Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th>D<90th percentile, HD≥90th percentile).
§Significant difference using a CI [1.00-2.00]
**Bowel-Related DRCHC Participants (Cases) Matched with Control Participants**

**Demographic Characteristics.** Conditional logistic regression analysis showed an association between having a bowel-related DRCHC and the following characteristics: Family History of Health Conditions, Weight Status, Race, Age, Current Health Status, Weight Stability, Health Insurance Now, Bowel Movement Characteristics and the Number of Bowel Movement Characteristic Irregularities, and Following a Special Diet Regimen. Thus, participants with a bowel-related DRCHC were 3 times as likely to have a family member with a DRCHC (OR=3.22; Table 82), health insurance (OR=2.97; Table 83), five times greater likelihood of being White (OR=5.31; Table 83), and be significantly older (OR=1.43; Table 84). Additionally, bowel-related DRCHC participants were significantly more likely to have poorer health status (see Table 84), health insurance now (see Table 83), less weight stability over the past month (see Table 83), and follow a special diet regimen (OR=6.14; Table 83). As would be expected, this sub-population reported significantly more bowel movement irregularities than controls (see Tables 84 and 85). Bowel-related DRCHC participants were not significantly more likely to have been diagnosed with an eating disorder by a healthcare provider (see Table 82). There also were no significant differences between bowel-related DRCHC matched case and control participants on any other demographic characteristics (i.e., Family History of an Eating Disorder, Body Mass Index, Health Insurance When Growing Up, and Puberty Marker).

**Psychographic Characteristics.** Conditional logistic regression analysis revealed an association between having a bowel disease and the following psychographic
characteristics: Excessive Exercise, Eating Concerns, Shape Concerns, Weight Teasing History and Upset Level from Weight Teasing, Total Number and Types of Weight Teasing Insults, Body Image Media Pressures (i.e., Information from the Media), Depression, Anxiety, OCD Severity, Mentally and Physically Unhealthy Days, Health Value, Avoidant Coping, Mealtime Structure, and Disturbed Eating Severity Categories. Thus, participants with a bowel disease were more likely to exercise excessively as a means of controlling their weight and have Eating and Shape Concerns scores that approached statistical significance (Table 86). Self-reported Body Weight Perception Scores at various time points in life were not statistically significant between the case and control groups, except for perceptions of weight in the 6th grade, where significantly fewer cases perceived themselves as average and more cases perceived themselves as heavy (Table 87 and 88).
Table 82. Frequencies, ORs and CIs of Health History Characteristics Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;‡&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Female (N=104)</td>
<td>Male (N=31)</td>
</tr>
<tr>
<td>Diagnosis of an Eating Disorder by a Health Care Provider</td>
<td>8 (6)</td>
<td>8 (8)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

Family History of these Health Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Any Diet-Related Chronic Health Condition</th>
<th>Type 1 Diabetes</th>
<th>Type 2 Diabetes</th>
<th>Celiac Disease</th>
<th>Cystic Fibrosis</th>
<th>Inflammatory Bowel Diseases</th>
<th>Irritable Bowel Syndrome</th>
<th>OR&lt;sup&gt;‡&lt;/sup&gt;</th>
<th>95% CI&lt;sup&gt;‡&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>82 (61)</td>
<td>60 (58)</td>
<td>22 (71)</td>
<td>168 (31)</td>
<td>126 (30)</td>
<td>3.22</td>
<td>2.19-4.72</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>12 (9)</td>
<td>6 (6)</td>
<td>6 (19)</td>
<td>40 (7)</td>
<td>24 (6)</td>
<td>16 (13)</td>
<td>1.22</td>
<td>0.62-2.41</td>
<td>0.562</td>
<td></td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>20 (15)</td>
<td>15 (14)</td>
<td>5 (16)</td>
<td>67 (12)</td>
<td>45 (11)</td>
<td>22 (18)</td>
<td>1.22</td>
<td>0.72-2.08</td>
<td>0.461</td>
<td></td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>7 (5)</td>
<td>6 (6)</td>
<td>1 (3)</td>
<td>3 (0.6)</td>
<td>2 (0.5)</td>
<td>1 (1)</td>
<td>9.33</td>
<td>2.41-36.09</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>2 (2)</td>
<td>1 (1)</td>
<td>1 (3)</td>
<td>2 (0.5)</td>
<td>2 (0.5)</td>
<td>0 (0)</td>
<td>0.17</td>
<td>0.56-28.40</td>
<td>0.166</td>
<td></td>
</tr>
<tr>
<td>Inflammatory Bowel Diseases</td>
<td>14 (10)</td>
<td>8 (8)</td>
<td>6 (19)</td>
<td>9 (2)</td>
<td>8 (2)</td>
<td>1 (1)</td>
<td>5.33</td>
<td>2.45-12.66</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>44 (33)</td>
<td>33 (32)</td>
<td>11 (36)</td>
<td>15 (6)</td>
<td>13 (3)</td>
<td>2 (2)</td>
<td>16.45</td>
<td>8.26-32.77</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

Family History with Eating Disorders

<table>
<thead>
<tr>
<th></th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;‡&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Female (N=104)</td>
<td>Male (N=31)</td>
</tr>
<tr>
<td></td>
<td>8 (6)</td>
<td>5 (5)</td>
<td>3 (10)</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

<sup>‡</sup>Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

<sup>†</sup>OR=Odds Ratio; CI=Confidence Interval
Table 83. Frequencies, ORs and CIs of Characteristics Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>122 (90)</td>
<td>93 (89)</td>
<td>29 (94)</td>
</tr>
<tr>
<td>Non-White</td>
<td>13 (10)</td>
<td>11 (11)</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Body Mass Index Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Wt [kg]/Ht [m²])</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>12 (9)</td>
<td>11 (11)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>98 (73)</td>
<td>76 (73)</td>
<td>22 (71)</td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>17 (13)</td>
<td>10 (10)</td>
<td>7 (23)</td>
</tr>
<tr>
<td>Obese (BMI &gt;30)</td>
<td>8 (6)</td>
<td>7 (7)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Weight Remained Stable over Past Month (±1 to 2 pounds of usual weight)</td>
<td>88 (65)</td>
<td>67 (64)</td>
<td>21 (68)</td>
</tr>
<tr>
<td>Weight Change was Intentional‡</td>
<td>16 (12)</td>
<td>11 (11)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Had Health Insurance When Growing Up</td>
<td>129 (96)</td>
<td>99 (95)</td>
<td>30 (97)</td>
</tr>
<tr>
<td>Has Health Insurance Now</td>
<td>129 (96)</td>
<td>99 (95)</td>
<td>30 (97)</td>
</tr>
<tr>
<td>Special Diet Regimen Followed</td>
<td>73 (54)</td>
<td>59 (56)</td>
<td>12 (39)</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

*Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval

‡N=34 Bowel Disease participants (n=27 females and n=7 males) and N=88 Healthy participants (n=68 females and n=20 males) for only participants who reported Weight Change as Intentional.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowl Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;#&lt;/sup&gt;</th>
<th>OR&lt;sup&gt;†&lt;/sup&gt;</th>
<th>95% CI&lt;sup&gt;†&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
<td>All (N=540)</td>
<td>Females (N=416)</td>
<td>Males (N=124)</td>
</tr>
<tr>
<td>Age</td>
<td>20.77±1.15</td>
<td>20.98±2.21</td>
<td>20.06±1.79</td>
<td>19.69±1.44</td>
<td>19.71±1.46</td>
<td>19.64±1.40</td>
</tr>
<tr>
<td>Puberty Marker (age)&lt;sup&gt;‡&lt;/sup&gt;</td>
<td>11.03±1.60</td>
<td>10.91±1.64</td>
<td>11.42±1.41</td>
<td>11.15±1.66</td>
<td>10.98±1.65</td>
<td>11.73±1.58</td>
</tr>
<tr>
<td>Body Mass Index (Wt [kg]/Ht [m&lt;sup&gt;2&lt;/sup&gt;])</td>
<td>22.66±3.82</td>
<td>22.37±4.04</td>
<td>23.63±2.78</td>
<td>22.65±3.80</td>
<td>22.37±4.01</td>
<td>23.61±2.77</td>
</tr>
<tr>
<td>Current Health Status (1 to 5)&lt;sup&gt;¥&lt;/sup&gt;</td>
<td>3.35±0.91</td>
<td>3.30±0.92</td>
<td>3.52±0.87</td>
<td>3.62±0.90</td>
<td>3.58±0.88</td>
<td>3.76±0.95</td>
</tr>
<tr>
<td>Total # of Bowel Irregularities (0-3)&lt;sup&gt;§&lt;/sup&gt;</td>
<td>0.99±1.08</td>
<td>0.89±1.03</td>
<td>1.29±1.19</td>
<td>0.81±1.01</td>
<td>0.78±0.99</td>
<td>0.92±1.05</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

<sup>#</sup> Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

<sup>†</sup>OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

<sup>‡</sup>Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.

<sup>¥</sup>Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent).

<sup>§</sup>Significant using C<sub>90</sub>[1.01-1.36]
Table 85. Frequencies, ORs and CIs of Bowel Movement Characteristics Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Healthy Participants (Controls)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Females (N=104)</td>
<td>Females (N=416)</td>
<td>Males (N=124)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that was</td>
<td>114 (84)</td>
<td>86 (83)</td>
<td>28 (90)</td>
</tr>
<tr>
<td>relieved by having a bowel movement?</td>
<td>249 (46)</td>
<td>212 (51)</td>
<td>37 (30)</td>
</tr>
<tr>
<td></td>
<td>OR†</td>
<td>4.34-12.72</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>During the past 3 months or longer had abdominal discomfort or pain that led</td>
<td>83 (61)</td>
<td>66 (64)</td>
<td>17 (55)</td>
</tr>
<tr>
<td>to changes in the frequency of bowel movements?</td>
<td>90 (17)</td>
<td>77 (19)</td>
<td>13 (11)</td>
</tr>
<tr>
<td></td>
<td>OR†</td>
<td>5.54-14.31</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>During the past 3 months or longer appearance of bowel movements changed?</td>
<td>64 (47)</td>
<td>48 (46)</td>
<td>16 (52)</td>
</tr>
<tr>
<td></td>
<td>77 (14)</td>
<td>63 (15)</td>
<td>14 (11)</td>
</tr>
<tr>
<td></td>
<td>OR†</td>
<td>3.61-8.73</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome  
†Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.  
†OR=Odds Ratio; CI=Confidence Interval
### Table 86. Means, ORs and CIs of Eating Behavior Scores Between Bowel-Related DRCHC* Cases Matched with Controls

| Characteristic (possible score range) | Bowel Disease Participants (Cases) | Healthy Participants (Controls) | Matched Participants* | Mean+SD† | Mean+SD† | Mean+SD† | Mean+SD† | OR† | 95% CI† | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Eating Disorder Examination Questionnaire** | | | | All (N=135) | Females (N=104) | Males (N=31) | All (N=540) | Females (N=416) | Males (N=124) | | |
| Eating Concerns (0 to 6) | 0.89±1.12 | 0.98±1.16 | 0.61±0.89 | 0.73±1.02 | 0.86±1.10 | 0.31±0.55 | 1.17 | 0.98-1.40 | 0.091‡ | |
| Restraint (0 to 28) | 1.31±1.50 | 1.35±1.54 | 1.18±1.38 | 1.18±1.40 | 1.31±1.44 | 0.76±1.20 | 1.07 | 0.93-1.22 | 0.335 | |
| Inappropriate Compensatory Behaviors Score (0 to 6) | 0.39±0.86 | 0.38±0.87 | 0.41±0.82 | 0.33±0.76 | 0.34±0.79 | 0.30±0.67 | 1.09 | 0.87-1.37 | 0.454 | |
| Self-Induced Vomiting (0 to 6) | 0.22±0.98 | 0.20±0.92 | 0.29±1.19 | 0.25±1.07 | 0.29±1.16 | 0.13±0.69 | 0.97 | 0.81-1.17 | 0.771 | |
| Medicine Misuse (0 to 6) | 0.27±1.05 | 0.29±1.13 | 0.23±0.72 | 0.21±0.99 | 0.21±1.01 | 0.20±0.92 | 1.06 | 0.90-1.26 | 0.485 | |
| Excessive Exercise (0 to 6) | 0.77±1.41 | 0.75±1.40 | 0.84±1.46 | 0.56±1.15 | 0.56±1.17 | 0.53±1.10 | 1.15 | 0.99-1.33 | 0.064‡ | |
| Global EDE-Q Score (0 to 6) | 1.58±1.33 | 1.68±1.39 | 1.25±1.06 | 1.41±1.27 | 1.60±1.32 | 0.80±0.87 | 1.12 | 0.96-1.32 | 0.147 | |
| **Three-Factor Eating Questionnaire-18** | | | | All (N=135) | Females (N=104) | Males (N=31) | All (N=540) | Females (N=416) | Males (N=124) | | |
| Emotional Eating (1 to 4) | 2.03±0.74 | 2.09±0.76 | 1.86±0.67 | 2.03±0.78 | 2.16±5.26 | 1.60±0.63 | 1.01 | 0.79-1.31 | 0.917 | |
| Disinhibited Eating (1 to 4) | 2.12±0.65 | 2.11±0.61 | 2.14±0.75 | 2.15±0.69 | 2.17±0.70 | 2.08±0.66 | 0.92 | 0.69-1.23 | 0.576 | |
| **Night Eating Severity** (0 to 30) | 1.81±5.18 | 1.59±4.91 | 2.55±6.02 | 2.17±5.29 | 2.16±5.26 | 2.19±5.44 | 0.99 | 0.95-1.03 | 0.476 | |

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

‡Significant difference using CI0 [1.00-1.36]

§Significant difference using CI90 [1.02-1.30]
Table 87. Means, ORs and CIs of Shape and Weight Concerns, Physical Appearance, Body Image Distortion, and Perception of Body Weight Scores Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135) Females (N=104) Males (N=31)</td>
<td>All (N=540) Females (N=416) Males (N=124)</td>
<td>OR† 95% CI† p-value</td>
</tr>
<tr>
<td></td>
<td>Mean±SD † Mean±SD Mean±SD</td>
<td>Mean±SD Mean±SD Mean±SD</td>
<td>Mean±SD Mean±SD Mean±SD</td>
</tr>
<tr>
<td>Eating Disorder Examination Questionnaire</td>
<td>Shape Concerns (0 to 6)</td>
<td>2.29±1.71 2.43±1.76 1.83±1.48</td>
<td>2.03±1.64 2.29±1.66 1.18±1.21</td>
</tr>
<tr>
<td></td>
<td>Weight Concerns (0 to 6)</td>
<td>1.81±1.62 1.94±1.70 1.39±1.22</td>
<td>1.71±1.57 1.94±1.63 0.94±1.05</td>
</tr>
<tr>
<td>Appearance Schema Inventory-Revised</td>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>3.27±0.75 3.26±0.78 3.30±0.65</td>
<td>3.26±0.72 3.34±0.72 3.00±0.65</td>
</tr>
<tr>
<td></td>
<td>Motivational Salience (1 to 5)</td>
<td>3.60±0.72 3.56±0.69 3.71±0.68</td>
<td>3.65±0.67 3.70±0.66 3.51±0.69</td>
</tr>
<tr>
<td>Body Image Distortion (-2 to 2)‡</td>
<td>Weight in 1st grade (1 to 3)</td>
<td>1.52±0.66 1.59±0.68 1.29±0.53</td>
<td>1.54±0.62 1.53±0.62 1.58±0.60</td>
</tr>
<tr>
<td></td>
<td>Weight in 6th grade (1 to 3)</td>
<td>1.84±0.84 1.93±0.84 1.55±0.77</td>
<td>1.79±0.77 1.73±0.76 1.97±0.76</td>
</tr>
<tr>
<td></td>
<td>Weight in 10th grade (1 to 3)</td>
<td>1.74±0.72 1.79±0.73 1.58±0.67</td>
<td>1.79±0.71 1.76±0.72 1.85±0.71</td>
</tr>
<tr>
<td></td>
<td>Current Weight (1 to 3)</td>
<td>1.95±0.68 1.96±0.68 1.90±0.70</td>
<td>1.96±0.68 1.96±0.70 1.98±0.60</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

‡Significant difference using CI90 [1.01-1.25]

§Defined as perceived body weight score minus actual body weight category. Means closer to zero indicate body weight is perceived accurately. Positive values indicate that individuals perceived they were heavier than they actually were whereas negative values indicate that individuals perceived they weighed less than they actually did.

∆Indicate changes of Mean Perceptions of Body Weight between time periods in columns.
DRCHC participants with bowel disease also were significantly more likely than healthy participants to have been weight teased as a child with the weight teasing insults (i.e., being made fun of and/or laughed (OR=1.63 and OR=1.77, respectively; Table 88) because of weight) causing more upset (OR=1.19; Table 89). Bowel-related DRCHC participants also were 19 percent less likely to report feeling pressure from the media to maintain a particular body image than controls (see Table 89). Bowel-related DRCHC participants, compared to controls, had approximately 5 percent greater depression, anxiety, and OCD severity (Table 89) and more mentally and physically unhealthy days (Table 92). In addition, bowel-related DRCHC participants placed a 46 percent greater value on their health, and were 25 percent more likely to use avoidant coping skills, and recall family mealtimes being less structured than control participants (see Tables 92 and 93). With regard to eating severity categories, bowel-related DRCHC participants were significantly more likely to be categorized as disturbed eaters (OR=1.49) and concomitantly less likely to be categorized as non-disturbed eaters (OR=0.63) than controls (Tables 94).

Other psychographic characteristics were not significantly different in bowel-related DRCHC matched case and control participants. These include: Weight Concerns, Restraint, Global EDE-Q Score, Binge Eating, Self-Induced Vomiting, Misuse of Medicine, Emotional Eating, Disinhibited Eating, Night Eating Severity, Self-Evaluative Salience, Motivational Salience, Body Image Distortion (see Tables 86 and 87), Pressures from Media, Internalization of Media Messages (see Table 89), Use of Body Image Intense Media (Tables 90 and 91), Mealtime Communication Based Stress, Appearance Weight Control and Emphasis on Mother’s Weight (see Table 93).
Table 88. Frequencies, ORs and CIs of Perceptions of Body Weight Over Time & Weight Teasing Frequency Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
<th>OR†</th>
<th>95% CI†</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135) Females (N=104) Males (N=31)</td>
<td>All (N=540) Females (N=416) Males (N=124)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight in 1st grade (about age 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>77 (57)</td>
<td>54 (52)</td>
<td>23 (74)</td>
<td></td>
<td>284 (53)</td>
<td>225 (54)</td>
</tr>
<tr>
<td>Average</td>
<td>46 (34)</td>
<td>39 (38)</td>
<td>7 (23)</td>
<td></td>
<td>221 (41)</td>
<td>163 (39)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>12 (9)</td>
<td>11 (11)</td>
<td>1 (3)</td>
<td></td>
<td>35 (7)</td>
<td>28 (7)</td>
</tr>
<tr>
<td>Weight in 6th grade (about age 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>59 (44)</td>
<td>40 (39)</td>
<td>19 (61)</td>
<td></td>
<td>230 (43)</td>
<td>192 (46)</td>
</tr>
<tr>
<td>Average</td>
<td>38 (28)</td>
<td>31 (30)</td>
<td>7 (23)</td>
<td></td>
<td>196 (36)</td>
<td>144 (35)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>38 (28)</td>
<td>33 (32)</td>
<td>5 (16)</td>
<td></td>
<td>114 (21)</td>
<td>80 (19)</td>
</tr>
<tr>
<td>Weight in 10th grade (about age 16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>57 (42)</td>
<td>41 (39)</td>
<td>16 (52)</td>
<td></td>
<td>208 (39)</td>
<td>167 (40)</td>
</tr>
<tr>
<td>Average</td>
<td>56 (42)</td>
<td>44 (42)</td>
<td>12 (39)</td>
<td></td>
<td>240 (44)</td>
<td>180 (43)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>22 (16)</td>
<td>19 (18)</td>
<td>3 (10)</td>
<td></td>
<td>92 (17)</td>
<td>69 (11)</td>
</tr>
<tr>
<td>Current Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>35 (26)</td>
<td>26 (25)</td>
<td>9 (29)</td>
<td></td>
<td>135 (25)</td>
<td>111 (26)</td>
</tr>
<tr>
<td>Average</td>
<td>72 (53)</td>
<td>56 (54)</td>
<td>16 (52)</td>
<td></td>
<td>292 (54)</td>
<td>213 (51)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>28 (21)</td>
<td>22 (21)</td>
<td>6 (19)</td>
<td></td>
<td>114 (21)</td>
<td>93 (22)</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>69 (52)</td>
<td>47 (45)</td>
<td>12 (39)</td>
<td></td>
<td>218 (40)</td>
<td>171 (41)</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>47 (35)</td>
<td>39 (38)</td>
<td>8 (26)</td>
<td></td>
<td>132 (24)</td>
<td>97 (23)</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>31 (23)</td>
<td>25 (24)</td>
<td>6 (19)</td>
<td></td>
<td>107 (20)</td>
<td>78 (19)</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval

‡Significant difference using CI90 [0.48-0.97]
Table 89. Means, ORs and CIs of Weight Teasing History, Body Image Media Pressures, & Psychological Characteristic Scores Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)</td>
<td>1.77±1.07</td>
<td>1.82±1.07</td>
<td>1.61±1.08</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)‡</td>
<td>3.61±1.25</td>
<td>3.74±1.25</td>
<td>3.01±1.11</td>
</tr>
<tr>
<td>Total Number of Types of Weight Teasing Insults (0-3)</td>
<td>1.09±1.22</td>
<td>1.16±1.22</td>
<td>0.84±1.21</td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>3.25±1.08</td>
<td>3.37±1.12</td>
<td>2.86±0.87</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>3.18±1.30</td>
<td>3.17±1.32</td>
<td>3.19±1.22</td>
</tr>
<tr>
<td>Information-Media (1 to 5)</td>
<td>2.81±0.94</td>
<td>2.88±0.97</td>
<td>2.54±0.76</td>
</tr>
<tr>
<td>Patient Health Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td>7.06±5.53</td>
<td>7.07±5.62</td>
<td>7.03±5.33</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (0 to 21)</td>
<td>7.03±5.49</td>
<td>7.32±5.66</td>
<td>6.06±4.86</td>
</tr>
<tr>
<td>Florida Obsessive Compulsive Inventory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder Severity</td>
<td>3.39±4.20</td>
<td>3.47±4.33</td>
<td>3.10±3.79</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

†Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

‡OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

†N=69 Bowel Disease participants (n=57 females and n=12 males) and N=223 Healthy participants (n=174 females and n=49 males) for those who were weight teased.
Table 90. Frequencies, ORs and CIs with Use of Body Image Intense Media Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants$\ddagger$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>All (N=540)</td>
<td>OR† 95% CI† p-value</td>
</tr>
<tr>
<td></td>
<td>Females (N=104)</td>
<td>Females (N=416)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Males (N=31)</td>
<td>Males (N=124)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Number of Favorite TV Programs that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>27 (20)</td>
<td>121 (22)</td>
<td>0.86 0.53-1.39 0.534</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>6 (4)</td>
<td>15 (3)</td>
<td>1.67 0.62-4.53 0.313</td>
</tr>
<tr>
<td>Number of Favorite Magazines that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>43 (32)</td>
<td>154 (29)</td>
<td>1.17 0.78-1.78 0.447</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>35 (26)</td>
<td>171 (32)</td>
<td>0.73 0.47-1.15 0.173</td>
</tr>
<tr>
<td>Number of Favorite Websites that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>103 (76)</td>
<td>379 (70)</td>
<td>1.39 0.89-2.17 0.152</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>3 (2)</td>
<td>44 (9)</td>
<td>$0.24 0.07-0.79 0.018$</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

$\ddagger$Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval
Table 91. Means, ORs and CIs of Body Image Intense Media Viewing Scores Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
</tr>
<tr>
<td>Body Image Intense TV Viewing</td>
<td>0.29±0.54</td>
<td>0.35±0.59</td>
<td>0.10±0.30</td>
</tr>
<tr>
<td>(0 to 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Image Intense Magazine Viewing</td>
<td>0.84±0.81</td>
<td>0.93±0.82</td>
<td>0.52±0.72</td>
</tr>
<tr>
<td>(0 to 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Image Intense Website Viewing</td>
<td>0.81±0.45</td>
<td>0.88±0.39</td>
<td>0.58±0.56</td>
</tr>
<tr>
<td>(0 to 2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Body Image Intense Media Score</td>
<td>1.93±1.31</td>
<td>2.15±1.31</td>
<td>1.19±1.05</td>
</tr>
<tr>
<td>(0 to 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
Table 2. Means, ORs, and CIs of Interpersonal Behavior Characteristics & Distributed Emotion Severity Score Between Bowel Disease & Healthy Patients

<table>
<thead>
<tr>
<th>Bowel Disease (Cases) Matched with Control</th>
<th>OR 95% CI</th>
<th>Effect Size (ES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Patients (Controls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.73 (0.50 - 1.06)</td>
<td>-0.23</td>
</tr>
<tr>
<td>Depression</td>
<td>1.22 (0.87 - 1.72)</td>
<td>0.17</td>
</tr>
<tr>
<td>Anger</td>
<td>0.96 (0.68 - 1.37)</td>
<td>-0.03</td>
</tr>
<tr>
<td>Hostility</td>
<td>1.48 (1.04 - 2.12)</td>
<td>0.20</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>0.79 (0.53 - 1.19)</td>
<td>-0.20</td>
</tr>
<tr>
<td>Partner-Related Characteristics (Cont)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Professional Background</td>
<td>1.12 (0.76 - 1.67)</td>
<td>0.10</td>
</tr>
<tr>
<td>Education</td>
<td>1.01 (0.67 - 1.54)</td>
<td>-0.02</td>
</tr>
<tr>
<td>Occupation</td>
<td>0.85 (0.56 - 1.29)</td>
<td>-0.18</td>
</tr>
<tr>
<td>Gender</td>
<td>1.08 (0.73 - 1.61)</td>
<td>-0.01</td>
</tr>
<tr>
<td>Age</td>
<td>0.99 (0.95 - 1.03)</td>
<td>0.004</td>
</tr>
<tr>
<td>Race</td>
<td>1.03 (0.88 - 1.22)</td>
<td>0.03</td>
</tr>
<tr>
<td>Income</td>
<td>0.97 (0.82 - 1.14)</td>
<td>-0.01</td>
</tr>
<tr>
<td>BMI</td>
<td>1.00 (0.96 - 1.05)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Note: OR = Odds Ratio; CI = Confidence Interval; ES = Effect Size; BMI = Body Mass Index; Within = 0.05 units; Significant comparisons are underlined.
Table 93. Means, ORs and CIs of Family and Social Environment Characteristics Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
<th>OR †</th>
<th>95% CI †</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
<td>All (N=540)</td>
<td>Females (N=416)</td>
<td>Males (N=124)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD †</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Childhood Family Mealtime Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.65±0.68</td>
<td>1.66±0.71</td>
<td>1.59±0.55</td>
<td>1.61±0.61</td>
<td>1.59±0.61</td>
<td>1.70±0.61</td>
</tr>
<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>2.98±1.05</td>
<td>2.85±1.05</td>
<td>3.44±0.90</td>
<td>3.27±1.08</td>
<td>3.21±1.10</td>
<td>3.49±0.97</td>
</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>1.99±0.89</td>
<td>2.09±0.93</td>
<td>1.66±0.62</td>
<td>1.92±0.94</td>
<td>1.95±0.96</td>
<td>1.81±0.85</td>
</tr>
<tr>
<td>Emphasis on Mother's Weight (1 to 5)</td>
<td>2.10±0.91</td>
<td>2.11±0.97</td>
<td>2.06±0.71</td>
<td>1.97±0.87</td>
<td>2.00±0.90</td>
<td>1.89±0.75</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
Table 94. Frequencies, ORs and CIs of Disturbed Eating Severity Categories Between Bowel-Related DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Categories ‡</th>
<th>Bowel Disease Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=135)</td>
<td>Females (N=104)</td>
<td>Males (N=31)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>40 (30)</td>
<td>30 (29)</td>
<td>10 (32)</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>43 (32)</td>
<td>33 (32)</td>
<td>10 (32)</td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>37 (27)</td>
<td>28 (27)</td>
<td>9 (29)</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>15 (11)</td>
<td>13 (13)</td>
<td>2 (7)</td>
</tr>
</tbody>
</table>

*Bowel-Related DRCHC (Diet-Related Chronic Health Condition)=Celiac Disease, Inflammatory Bowel Disease & Irritable Bowel Syndrome

Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval

‡Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th ≤ D<90th percentile, HD≥90th percentile).

‡Significant difference using CI90 [1.02-2.17]
Type 1 Diabetes DRCHC Participants Matched with Control Participants

Demographic Characteristics. Conditional logistic regression analysis showed an association between having type 1 diabetes and the following characteristics: Family History of Type 1 Diabetes, Special Dietary Regimen Followed, Age, and start of Puberty. Thus, participants with type 1 diabetes were 4 times more likely to have a family member with a type 1 diabetes (OR=4.00; Table 95), follow a special dietary regimen (OR=14.55; Table 96), be significantly older (OR=1.45; Table 97), and report later onset of puberty (OR=1.35) than their healthy counterparts. There were no significant differences in type 1 diabetes matched case-control participants on any other demographic characteristic (i.e., Diagnosis of an Eating Disorder, Family History of an Eating Disorder, Weight Status, Health Insurance Status, Race, Body Mass Index, Current Health Status, Total Number of Bowel Irregularities) (see Tables 95 to 97).

Psychographic Characteristics. Conditional logistic regression analysis revealed an association with having type 1 diabetes and the following psychographic characteristics: Health Value, Mealtime Structure, Emphasis on Mother’s Weight, and Disturbed Eating Severity Categories. Thus, DRCHC participants with type 1 diabetes were significantly (using a CI$_{90}$) more likely than healthy participants to place a greater value on their health (OR=1.79), recall less structured family mealtimes (OR=0.66) and a greater emphasis being placed on their mother’s weight as a child (OR=1.69), and were significantly less likely to be categorized as a non-disturbed eater (0.31) than control participants (Tables 101 to 104). The cases and controls only differed with regard to the non-disturbed eating severity category. That is, type 1 diabetes participants were significantly less likely to be
categorized as a non-disturbed eater than controls (Tables 104). Additionally, a response
gradient was seen in the corresponding odds ratio scores of disturbed eating severity
categories (i.e., non-disturbed, mildly disturbed, disturbed, highly disturbed). That is, the
odds ratio scores tended to increase among the Disturbed Eating Severity categories
starting with least (i.e., non-disturbed) to most disturbed eaters (see Table 104).

Other psychographic characteristics were not found to be significantly different
between type 1 diabetes DRCHC matched case and control study participants. These
include: Restraint, Eating Concerns, Shape Concerns, Weight Concerns, Global EDE-Q
Score, Binge Eating, Self-Induced Vomiting, Misuse of Medicine, Excessive Exercise,
Emotional Eating, Disinhibited Eating, Night Eating Severity, Self-Evaluative Salience,
Motivational Salience, Body Image Distortion (see Tables 98 and 99), Weight Teasing
History and Upset Level from Weight Teasing, Total Number and Types of Weight
Teasing Insults, Depression, Anxiety, OCD Severity, Mentally and Physically Unhealthy
Days, Health Value, Avoidant Coping, Pressures from Media, Internalization of Media
Messages (see Tables 100 and 101), Mealtime Communication Based Stress, Appearance
Weight Control (see Table 103).
Table 95. Frequencies, ORs and CIs of Health History Characteristics Between Type 1 Diabetes DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
</tr>
<tr>
<td>Diagnosis of an Eating Disorder by a Health Care Provider</td>
<td>1 (5)</td>
<td>0 (0)</td>
<td>1 (17)</td>
</tr>
<tr>
<td>Family History of these Health Conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Diet-Related Chronic Health Condition</td>
<td>7 (35)</td>
<td>4 (29)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>4 (20)</td>
<td>2 (14)</td>
<td>2 (33)</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>3 (15)</td>
<td>2 (14)</td>
<td>1 (17)</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>2 (10)</td>
<td>1 (7)</td>
<td>1 (17)</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Family History with Eating Disorders</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
\#Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.
\†OR=Odds Ratio; CI=Confidence Interval
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;‡&lt;/sup&gt;</th>
<th>OR&lt;sup&gt;†&lt;/sup&gt;</th>
<th>95% CI&lt;sup&gt;†&lt;/sup&gt;</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20) Females (N=14) Males (N=6)</td>
<td>All (N=80) Females (N=56) Males (N=24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (%) N (%) N (%)                     N (%) N (%) N (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>17 (85) 12 (86) 5 (83)</td>
<td>51 (64) 38 (68) 13 (54)</td>
<td>2.98 0.83-10.71 0.095</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-White</td>
<td>3 (15) 2 (14) 1 (17)</td>
<td>29 (36) 18 (32) 11 (46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index Category</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Wt [kg]/Ht [m&lt;sup&gt;2&lt;/sup&gt;])</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight (BMI &lt;18.5)</td>
<td>1 (5) 1 (7) 0 (0)</td>
<td>4 (5) 4 (7) 0 (0)</td>
<td>Matching Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal weight (BMI 18.5 to &lt;25)</td>
<td>16 (80) 12 (86) 4 (67)</td>
<td>64 (80) 48 (86) 16 (67)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight (BMI 25 to &lt;30)</td>
<td>2 (10) 1 (7) 1 (17)</td>
<td>8 (10) 4 (7) 4 (17)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese (BMI &gt;30)</td>
<td>1 (5) 0 (0) 1 (17)</td>
<td>4 (5) 0 (0) 4 (17)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Remained Stable over Past Month (+ 1 to 2 pounds of usual weight)</td>
<td>12 (60) 9 (64) 3 (50)</td>
<td>63 (79) 42 (75) 21 (81)</td>
<td>14.55 4.12-51.41 &lt;0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Change was Intentional&lt;sup&gt;‡&lt;/sup&gt;</td>
<td>2 (10) 2 (14) 0 (0)</td>
<td>5 (6) 5 (9) 0 (0)</td>
<td>14.55 4.12-51.41 &lt;0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had Health Insurance When Growing Up</td>
<td>16 (80) 11 (79) 5 (83)</td>
<td>71 (89) 51 (91) 20 (83)</td>
<td>0.36 0.06-2.17 0.264</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has Health Insurance Now</td>
<td>17 (85) 12 (86) 5 (83)</td>
<td>72 (90) 51 (91) 21 (88)</td>
<td>0.62 0.14-2.69 0.520</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Diet Regimen Followed</td>
<td>15 (75) 11 (79) 4 (67)</td>
<td>12 (15) 9 (16) 3 (13)</td>
<td>14.55 4.12-51.41 &lt;0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>*</sup>DRCHC=Diet-Related Chronic Health Condition  
<sup>#</sup>Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.  
<sup>†</sup>OR=Odds Ratio; CI=Confidence Interval  
<sup>‡</sup>N=7 Type 1 Diabetes participants (n=5 females and n=2 males) and N=10 Healthy participants (n=10 females and n=0 males) for only participants who reported Weight Change as Intentional.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants $^\dagger$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD $^\ddagger$</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Age</td>
<td>20.85±2.56</td>
<td>21.36±2.65</td>
<td>19.67±2.07</td>
</tr>
<tr>
<td></td>
<td>1.45</td>
<td>1.09-1.94</td>
<td>0.011</td>
</tr>
<tr>
<td>Puberty Marker (age) $^\ddagger$</td>
<td>12.11±2.16</td>
<td>11.76±1.37</td>
<td>12.92±3.43</td>
</tr>
<tr>
<td></td>
<td>1.35</td>
<td>1.01-1.79</td>
<td>0.042</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>22.72±2.91</td>
<td>22.05±2.13</td>
<td>24.30±4.02</td>
</tr>
<tr>
<td>(Wt [kg]/Ht [m$^2$])</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.68</td>
<td>0.00-∞</td>
<td>0.848</td>
</tr>
<tr>
<td>Current Health Status (1 to 5) $^\gamma$</td>
<td>3.70±0.66</td>
<td>3.57±0.65</td>
<td>4.00±0.63</td>
</tr>
<tr>
<td></td>
<td>0.90</td>
<td>0.50-1.61</td>
<td>0.724</td>
</tr>
<tr>
<td>Total # of Bowel Irregularities (0-3)</td>
<td>1.05±1.15</td>
<td>1.07±1.21</td>
<td>1.00±1.10</td>
</tr>
<tr>
<td></td>
<td>1.21</td>
<td>0.79-1.86</td>
<td>0.386</td>
</tr>
</tbody>
</table>

$^*_{DRCHC}=Diet-Related Chronic Health Condition$

$^\#_{Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.}$

$^\dagger_{OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation}$

$^\ddagger_{Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.}$

$^\gamma_{Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent).}$
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants$^\ddagger$</th>
<th>OR$^\dagger$</th>
<th>95% CI$^\dagger$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
<td>All (N=80)</td>
<td>Females (N=56)</td>
<td>Males (N=24)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD$^\ddagger$</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Eating Disorder Examination Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Concerns (0 to 6)</td>
<td>0.88±1.10</td>
<td>0.90±1.19</td>
<td>0.83±0.92</td>
<td>0.87±1.12</td>
<td>1.14±1.22</td>
<td>0.24±0.42</td>
</tr>
<tr>
<td>Restraint (0 to 6)</td>
<td>1.18±1.17</td>
<td>1.31±1.31</td>
<td>0.87±0.77</td>
<td>1.42±1.50</td>
<td>1.65±1.54</td>
<td>0.88±1.28</td>
</tr>
<tr>
<td>Binge Eating (0 to 28)</td>
<td>1.25±2.86</td>
<td>1.57±3.32</td>
<td>0.50±1.22</td>
<td>1.00±3.42</td>
<td>1.27±4.02</td>
<td>0.38±0.97</td>
</tr>
<tr>
<td>Inappropriate Compensatory Behaviors Score (0 to 6)</td>
<td>0.50±1.22</td>
<td>0.55±1.39</td>
<td>0.39±0.80</td>
<td>0.33±0.63</td>
<td>0.37±0.65</td>
<td>0.22±0.57</td>
</tr>
<tr>
<td>Self-Induced Vomiting (0 to 6)</td>
<td>0.40±1.39</td>
<td>0.43±1.60</td>
<td>0.33±0.82</td>
<td>0.10±0.69</td>
<td>0.14±0.82</td>
<td>0.00±0.00</td>
</tr>
<tr>
<td>Laxative and/or Insulin Misuse (0 to 6)</td>
<td>0.45±1.47</td>
<td>0.43±1.60</td>
<td>0.50±1.22</td>
<td>0.16±0.80</td>
<td>0.23±0.95</td>
<td>0.00±0.00</td>
</tr>
<tr>
<td>Excessive Exercise (0 to 6)</td>
<td>0.55±1.36</td>
<td>0.64±1.60</td>
<td>0.33±0.52</td>
<td>0.66±1.42</td>
<td>0.68±1.29</td>
<td>0.63±1.71</td>
</tr>
<tr>
<td>Global EDE-Q Score (0 to 6)</td>
<td>1.56±1.17</td>
<td>1.71±1.24</td>
<td>1.20±1.00</td>
<td>1.58±1.45</td>
<td>1.91±1.52</td>
<td>0.82±0.95</td>
</tr>
<tr>
<td>Three-Factor Eating Questionnaire-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>2.02±0.83</td>
<td>2.12±0.76</td>
<td>1.78±1.00</td>
<td>2.05±0.84</td>
<td>2.29±0.83</td>
<td>1.51±0.60</td>
</tr>
<tr>
<td>Disinhibited Eating (1 to 4)</td>
<td>2.12±0.71</td>
<td>2.10±0.65</td>
<td>2.17±0.91</td>
<td>2.17±0.68</td>
<td>2.56±0.71</td>
<td>1.97±0.56</td>
</tr>
<tr>
<td>Night Eating Severity (0 to 30)</td>
<td>3.55±7.12</td>
<td>2.07±5.44</td>
<td>7.00±9.76</td>
<td>1.94±5.32</td>
<td>1.71±4.96</td>
<td>2.46±6.15</td>
</tr>
<tr>
<td>Disturbed Eating Severity Score (0-18)</td>
<td>3.70±4.58</td>
<td>3.86±4.64</td>
<td>3.33±4.84</td>
<td>3.71±4.08</td>
<td>4.63±4.42</td>
<td>1.58±1.89</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

$^\ddagger$Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

$^\dagger$OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
### Means, ORs and CIs of Shape and Weight Concerns, Physical Appearance, and Body Image Distortion Scores Between Type 1 Diabetes DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants&lt;sup&gt;#&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD&lt;sup&gt;‡&lt;/sup&gt;</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Eating Disorder Examination Questionnaire</td>
<td>Shape Concerns (0 to 6)</td>
<td>2.13±1.43</td>
<td>2.38±1.50</td>
</tr>
<tr>
<td></td>
<td>Weight Concerns (0 to 6)</td>
<td>2.03±1.43</td>
<td>2.23±1.40</td>
</tr>
<tr>
<td>Appearance Schema Inventory-Revised</td>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>3.31±0.73</td>
<td>3.29±0.79</td>
</tr>
<tr>
<td></td>
<td>Motivational Salience (1 to 5)</td>
<td>3.64±0.59</td>
<td>3.61±0.49</td>
</tr>
<tr>
<td>Body Image Distortion (-2 to 2)&lt;sup&gt;‡&lt;/sup&gt;</td>
<td>0.95±0.76</td>
<td>0.93±0.73</td>
<td>1.00±0.89</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

<sup>#</sup>Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

<sup>†</sup>OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

<sup‡</sup>Defined as perceived body weight score minus actual body weight category. Means closer to zero indicate body weight is perceived accurately. Positive values indicate that individuals perceived they were heavier than they actually were whereas negative values indicate that individuals perceived they weighed less than they actually did.
Table 100. Frequencies, ORs and CIs of Weight Teasing Frequency Between Type 1 Diabetes DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants[^]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20) Females (N=14) Males (N=6)</td>
<td>All (N=80) Females (N=56) Males (N=24)</td>
<td>OR † 95% CI †  p-value</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>8 (40) 4 (29) 4 (67)</td>
<td>32 (40) 23 (41) 9 (38)</td>
<td>1.00 0.36-2.81 1.000</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>6 (30) 3 (21) 3 (50)</td>
<td>21 (26) 13 (23) 8 (33)</td>
<td>1.23 0.39-3.87 0.720</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>7 (35) 3 (21) 4 (67)</td>
<td>16 (20) 11 (20) 5 (21)</td>
<td>2.13 0.75-6.09 0.158</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

[^] Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)</td>
<td>1.85±1.19</td>
<td>1.45±0.81</td>
<td>2.78±1.49</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)*</td>
<td>3.53±1.20</td>
<td>4.07±0.72</td>
<td>3.00±1.41</td>
</tr>
<tr>
<td>Total Number of Types of Weight</td>
<td>1.05±1.23</td>
<td>0.71±1.14</td>
<td>1.83±1.17</td>
</tr>
<tr>
<td>Teasing Insults (0-5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards</td>
<td>3.35±0.94</td>
<td>3.46±1.02</td>
<td>3.08±0.72</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>3.30±1.13</td>
<td>3.43±1.22</td>
<td>3.00±0.89</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>2.85±0.75</td>
<td>2.75±0.69</td>
<td>3.08±0.90</td>
</tr>
<tr>
<td>Information-Media (1 to 5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Health Questionnaire</td>
<td>5.00±4.76</td>
<td>4.29±3.00</td>
<td>6.67±7.61</td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td>5.75±5.92</td>
<td>5.36±5.00</td>
<td>6.67±8.16</td>
</tr>
<tr>
<td>Anxiety (0 to 21)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida Obsessive Compulsive</td>
<td>3.00±4.53</td>
<td>2.86±3.48</td>
<td>3.33±6.80</td>
</tr>
<tr>
<td>Inventory (0 to 20)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*DRHC= Diet-Related Chronic Health Condition
*Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.
*OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation
*N=10 Type 1 Diabetes participants (n=5 females and n=5 males) and N=32 Healthy participants (n=23 females and n=9 males) for those who were weight teased.
Table 102. Means, ORs and CIs of Intrapersonal Behavior Characteristics Between Type 1 Diabetes DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20) Females (N=14) Males (N=6)</td>
<td>All (N=80) Females (N=56) Males (N=24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Rosenberg Self-Esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem (1 to 5)</td>
<td>3.61±0.99</td>
<td>3.55±1.06</td>
<td>3.75±0.91</td>
</tr>
<tr>
<td>Health Value (1 to 5)</td>
<td>3.56±0.73</td>
<td>3.63±0.72</td>
<td>3.42±0.82</td>
</tr>
<tr>
<td>Center for Disease Control-Quality of Life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentally Unhealthy Days (0 to 30)</td>
<td>4.65±5.12</td>
<td>5.36±5.30</td>
<td>3.00±4.69</td>
</tr>
<tr>
<td>Physically Unhealthy Days (0 to 30)</td>
<td>3.45±4.31</td>
<td>3.93±5.01</td>
<td>2.33±1.75</td>
</tr>
<tr>
<td>Coping Inventory for Stressful Situations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task-Oriented Coping (1 to 5)</td>
<td>4.18±0.63</td>
<td>4.24±0.65</td>
<td>4.06±0.61</td>
</tr>
<tr>
<td>Emotion-Oriented Coping (1 to 5)</td>
<td>2.92±0.99</td>
<td>2.86±1.06</td>
<td>3.06±0.88</td>
</tr>
<tr>
<td>Avoidant Coping (1 to 5)</td>
<td>3.20±1.28</td>
<td>3.07±1.38</td>
<td>3.50±1.05</td>
</tr>
<tr>
<td>Dichotomous Thinking in Eating Disorders Scale‡</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichotomous Eating Scale (1 to 4)</td>
<td>3.08±0.66</td>
<td>3.00±0.71</td>
<td>3.50±0.00</td>
</tr>
<tr>
<td>Wong &amp; Law Emotional Intelligence Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation of Emotion (7 to 28)</td>
<td>21.90±3.85</td>
<td>21.21±4.28</td>
<td>23.50±2.07</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

*Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

‡N=6 Type 1 Diabetes participants (n=5 females and n=1 males) and N=27 Healthy participants (n=23 females and n=4 males) for only those who reported dieting.

¥Significant difference using CI90 [1.02-3.14]
Table 103. Means, ORs and CIs of Family and Social Environment Characteristics Between Type 1 Diabetes DRCHC* Cases Matched with Controls

| Characteristic (possible score range) | Type 1 Diabetes Participants (Cases) | Healthy Participants (Controls) | Matched Participants
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20)</td>
<td>Females (N=14)</td>
<td>Males (N=6)</td>
</tr>
<tr>
<td></td>
<td>Mean±SD†</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td></td>
<td>OR‡</td>
<td>95% CI†</td>
<td>p-value</td>
</tr>
<tr>
<td>Childhood Family Mealtime Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime Communication-Based Stress (1 to 5)</td>
<td>1.79±0.59</td>
<td>1.70±0.56</td>
<td>2.00±0.64</td>
</tr>
<tr>
<td>Mealtime Structure (1 to 5)</td>
<td>2.80±0.99</td>
<td>2.62±1.00</td>
<td>3.22±0.89</td>
</tr>
<tr>
<td>Appearance Weight Control (1 to 5)</td>
<td>2.04±1.01</td>
<td>1.90±0.67</td>
<td>2.37±1.59</td>
</tr>
<tr>
<td>Emphasis on Mother's Weight (1 to 5)</td>
<td>2.38±0.89</td>
<td>2.24±0.70</td>
<td>2.72±1.24</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

†Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

‡OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation

§Significant difference using CI[0.43-1.00]

‡‡Significant difference using CI[1.06-2.69]
Table 104. Frequencies, ORs and CIs of Disturbed Eating Severity Categories Between Type 1 Diabetes DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Categories†</th>
<th>Type 1 Diabetes Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=20) Females (N=14) Males (N=6)</td>
<td>All (N=80) Females (N=56) Males (N=24)</td>
<td>OR† 95% CI† p-value</td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td></td>
<td>4 (20)</td>
<td>4 (29)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>9 (45)</td>
<td>6 (43)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>4 (20)</td>
<td>2 (14)</td>
<td>2 (33)</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>3 (15)</td>
<td>2 (14)</td>
<td>1 (17)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

†Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

‡OR=Odds Ratio; CI=Confidence Interval

†Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th≥D<90th percentile, HD≥90th percentile).

¥Significant difference using CI90 [0.099-0.995]
Cystic Fibrosis DRCHC Cases Matched with Control Participants

Conditional logistic regression analysis was only conducted with eating behavior characteristics of matched case-control cystic fibrosis participants due the small number of cystic fibrosis participants. These analyses revealed an association with having cystic fibrosis and the following: Excessive Exercise and Disturbed Eating Severity Categories.

Thus, cystic fibrosis DRCHC participants were 43 percent more likely than healthy participants to exercise excessively (Tables 105) and significantly less likely to be a disturbed eater (Table 106). There were no significant differences between cases and controls on any other eating behavior characteristics (i.e., Restraint, Eating Concerns, Binge Eating, Self-Induced Vomiting, Misusing Medicine, Emotional Eating, Disinhibited Eating, and Night Eating).

Comparison of All, Bowel-Related DRCHC, Type 1 Diabetes DRCHC, and Cystic Fibrosis DRCHC Matched Case-Control Group Finding

A comparison of demographic and psychographic characteristics of all DRCHC, bowel-related DRCHC, type 1 diabetes DRCHC, and cystic fibrosis DRCHC case-control study results were examined (Tables 107 and 108). Results for all DRCHC were similar on nearly all demographics and psychographics to the bowel-related DRCHC sub-group of cases and controls, except for Weight Remaining Stable, and Diagnosis of an Eating Disorder by a Healthcare Provider. Type 1 diabetes DRCHC cases differed from their matched controls on very few demographic characteristics (i.e., Puberty Marker, Age, Special Dietary Regimen and Family History with a Health Condition) so the results were somewhat different compared with all DRCHC case-control results. Cystic fibrosis
DRCHC case-controls demographic characteristic were not examined due to small sample size.

Bowel-related DRCHC case-control psychographic characteristic results were similar to all DRCHC case-control significant findings with the only differences between matched case-control groups of all DRCHC and bowel-related DRCHC were the following: Eating Concerns, Shape Concerns, Medicine Misuse, Non-Disturbed Eating Severity Category, and Emphasis on Mother’s Weight. Psychographic characteristic characteristics results for type 1 diabetes DRCHC case-control participants differed from all DRCHC case-control findings on these psychographic characteristics: Non-Disturbed Eating Severity category, Mentally and Physically Unhealthy Days, Avoidant Coping, Depression, Anxiety, Weight Teasing History and Weight Teasing Effect, Type of Weight Teasing (i.e., made fun of or laughed at because of weight), Medicine Misuse, Excessive Exercise, and Information from Media. Cystic fibrosis DRCHC case-control study eating behavior characteristic results were similar to all DRCHC case-control findings only for Excessive Exercise (see Table 108).

Type 1 diabetes DRCHC case-control demographic characteristic results were dissimilar to bowel-related DRCHC case-control significant findings with differences being the following: Family History of Any DRCHC, Race, Weight Remaining Stable, Health Insurance Now, Puberty Marker, Current Health Status, and Bowel Irregularities. Psychographic differences between Type 1 diabetes DRCHC and bowel-related DRCHC case-control findings were:
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Cystic Fibrosis Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=9) Mean±SD†</td>
<td>All (N=36) Mean±SD</td>
<td>OR† 95% CI† p-value</td>
</tr>
<tr>
<td><strong>Eating Disorder Examination Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Concerns (0 to 6)</td>
<td>1.18±1.51</td>
<td>1.26±1.44</td>
<td>1.02 0.66-1.57 0.943</td>
</tr>
<tr>
<td>Restraint (0 to 6)</td>
<td>1.60±1.88</td>
<td>1.64±1.70</td>
<td>0.99 0.62-1.56 0.948</td>
</tr>
<tr>
<td>Binge Eating (0 to 28)</td>
<td>4.11±8.62</td>
<td>3.61±6.66</td>
<td>1.01 0.91-1.12 0.843</td>
</tr>
<tr>
<td>Inappropriate Compensatory Behaviors Score (0 to 6)</td>
<td>1.33±2.23</td>
<td>0.58±0.69</td>
<td>1.47 0.88-2.56 0.140</td>
</tr>
<tr>
<td>Self-Induced Vomiting (0 to 6)</td>
<td>1.33±2.65</td>
<td>0.58±1.61</td>
<td>1.20 0.85-1.69 0.300</td>
</tr>
<tr>
<td>Laxative and/or Insulin Misuse (0 to 6)</td>
<td>1.33±2.65</td>
<td>0.36±1.20</td>
<td>1.32 0.91-1.91 0.141</td>
</tr>
<tr>
<td>Excessive Exercise (0 to 6)</td>
<td>1.78±2.49</td>
<td>0.72±1.14</td>
<td>1.43 0.95-2.15 0.088†</td>
</tr>
<tr>
<td>Global EDE-Q Score (0 to 6)</td>
<td>1.71±1.67</td>
<td>1.86±1.64</td>
<td>0.93 0.56-1.55 0.776</td>
</tr>
<tr>
<td><strong>Three-Factor Eating Questionnaire-18</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>2.15±1.08</td>
<td>2.27±0.86</td>
<td>0.83 0.33-2.07 0.686</td>
</tr>
<tr>
<td>Disinhibited Eating (1 to 4)</td>
<td>1.96±0.82</td>
<td>2.19±0.82</td>
<td>0.72 0.29-1.75 0.464</td>
</tr>
<tr>
<td>Night Eating Severity (0 to 30)</td>
<td>2.00±6.00</td>
<td>2.50±6.03</td>
<td>0.99 0.87-1.12 0.831</td>
</tr>
<tr>
<td>Disturbed Eating Severity (0 to 18)</td>
<td>5.00±6.28</td>
<td>5.33±5.08</td>
<td>0.99 0.85-1.15 0.855</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

# Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.

†OR=Odds Ratio; CI=Confidence Interval; SD=Standard Deviation; †Significant difference using CI90 [1.01-2.01]
Table 106. Frequencies, ORs and CIs of Disturbed Eating Severity Categories Between Cystic Fibrosis DRCHC* Cases Matched with Controls

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Categories ‡</th>
<th>Cystic Fibrosis Participants (Cases)</th>
<th>Healthy Participants (Controls)</th>
<th>Matched Participants ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=9) N (%)</td>
<td>All (N=36) N (%)</td>
<td>OR †</td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>6 (68)</td>
<td>7 (19)</td>
<td>5.33 1.32-21.52 0.049</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>2 (22)</td>
<td>12 (33)</td>
<td>0.69 0.18-2.66 0.653</td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>1 (11)</td>
<td>7 (19)</td>
<td>0.38 0.04-3.46 0.391</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>0 (0)</td>
<td>10 (28)</td>
<td>0.03 0.00-209.93 0.030</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
‡Conditional Logistic Regression matched (1:4 ratio) on gender and body mass index (within ±0.50 units); Statistical comparisons are between all cases and controls.
†OR=Odds Ratio; CI=Confidence Interval;
‡Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th ≥ D<90th percentile, HD≥90th percentile).
Table 107. Comparison of Demographic Findings from Matched Case-Control Study Diet-Related Chronic Health Condition (DRCHC) Participants*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of DRCHC Case-Control Group†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
</tr>
<tr>
<td>1. Diagnosis of an Eating Disorder by a Health Care Provider</td>
<td>1.99</td>
</tr>
<tr>
<td>2. Family History of any DRCHC</td>
<td>2.85</td>
</tr>
<tr>
<td>3. Family History of the DRCHC</td>
<td>4.00-12.68</td>
</tr>
<tr>
<td>4. Family History with Eating Disorders</td>
<td></td>
</tr>
<tr>
<td>5. White Race</td>
<td>4.77</td>
</tr>
<tr>
<td>6. Body Mass Index Category (Wt [kg]/Ht [m²])</td>
<td></td>
</tr>
<tr>
<td>7. Weight Remained Stable over Past Month (± 1 to 2 pounds of usual weight)</td>
<td></td>
</tr>
<tr>
<td>8. Weight Change was Intentional</td>
<td></td>
</tr>
<tr>
<td>9. Had Health Insurance When Growing Up</td>
<td></td>
</tr>
<tr>
<td>10. Has Health Insurance Now</td>
<td>2.04</td>
</tr>
<tr>
<td>12. Age</td>
<td>1.42</td>
</tr>
<tr>
<td>13. Puberty Marker (age)</td>
<td></td>
</tr>
<tr>
<td>14. Current Health Status (1 to 5)</td>
<td>0.71</td>
</tr>
<tr>
<td>15. Total # of Bowel Irregularities</td>
<td>1.17</td>
</tr>
<tr>
<td>16. Recent pain with bowel movements</td>
<td>3.83</td>
</tr>
<tr>
<td>17. Recent change in frequency of bowel movements</td>
<td>3.32</td>
</tr>
<tr>
<td>18. Recent change in appearance of bowel movements</td>
<td>4.42</td>
</tr>
</tbody>
</table>

*Odds Ratios for significant difference between case-control participants is presented.

†Indicates CI⁹⁰ was used, otherwise CI⁹⁵ was used.

‡Cystic Fibrosis DRCHC participants were not included due to small sample size.
Table 108. Comparison of Psychographic Findings from Matched Case-Control Study Diet-Related Chronic Health Condition (DRCHC) Participants*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of DRCHC Case-Control Group</th>
<th>Cystic Fibrosis†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Bowel-Related</td>
</tr>
<tr>
<td>Eating Behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Eating Concerns</td>
<td>1.17*</td>
<td></td>
</tr>
<tr>
<td>2. Restraint</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Binge Eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Self-Induced Vomiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Medicine Misuse</td>
<td>1.41</td>
<td></td>
</tr>
<tr>
<td>6. Excessive Exercise</td>
<td>1.14</td>
<td>1.15*</td>
</tr>
<tr>
<td>7. Global EDE-Q Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Emotional Eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Disinhibited Eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Night Eating Severity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Shape Concerns</td>
<td>1.12*</td>
<td></td>
</tr>
<tr>
<td>12. Weight Concerns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Disturbed Eating Severity Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbed Eating Severity Category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Non-Disturbed</td>
<td>0.63</td>
<td>0.37*</td>
</tr>
<tr>
<td>2. Mildly-Disturbed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Disturbed</td>
<td>1.41*</td>
<td>1.49*</td>
</tr>
<tr>
<td>4. Highly-Disturbed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Image</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Self-Evaluative Salience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Motivational Salience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Body Image Distortion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pressures-Media</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Internalization-General</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Information-Media</td>
<td>0.81</td>
<td>0.81</td>
</tr>
<tr>
<td>7. Body Image Intense TV Viewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Body Image Intense Website Viewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Body Image Intense Magazine Viewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Total Body Image Intense Media Score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Odds Ratios for significant difference between case-control participants is presented.

*Indicates CI<sub>90</sub> was used, otherwise CI<sub>95</sub> was used.

†Cystic Fibrosis DRCHC participants were not included due to small sample size.
Table 108 Cont’d., Comparison of Psychographic Findings from Matched Case-Control Study Diet-Related Chronic Health Condition (DRCHC) Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Type of DRCHC Case-Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
</tr>
<tr>
<td>Weight Teasing</td>
<td></td>
</tr>
<tr>
<td>1. Weight Teasing History</td>
<td>1.24</td>
</tr>
<tr>
<td>2. Weight Teasing Effect</td>
<td>1.18</td>
</tr>
<tr>
<td>3. Total Number of Types of</td>
<td></td>
</tr>
<tr>
<td>Weight Teasing Insults</td>
<td>1.22</td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
</tr>
<tr>
<td>1. Made Fun of Because of Weight</td>
<td>1.55</td>
</tr>
<tr>
<td>2. Laughed At Because of Weight</td>
<td>1.68</td>
</tr>
<tr>
<td>3. Name Called (e.g., Fatso)</td>
<td></td>
</tr>
<tr>
<td>Psychological</td>
<td></td>
</tr>
<tr>
<td>1. Depression</td>
<td>1.04</td>
</tr>
<tr>
<td>2. Anxiety</td>
<td>1.04</td>
</tr>
<tr>
<td>3. Obsessive Compulsive Disorder</td>
<td></td>
</tr>
<tr>
<td>Intrapersonal</td>
<td></td>
</tr>
<tr>
<td>1. Self-Esteem</td>
<td></td>
</tr>
<tr>
<td>2. Health Value</td>
<td>1.54</td>
</tr>
<tr>
<td>3. Mentally Unhealthy Days</td>
<td>1.02</td>
</tr>
<tr>
<td>4. Physically Unhealthy Days</td>
<td>1.06</td>
</tr>
<tr>
<td>5. Task-Oriented Coping</td>
<td></td>
</tr>
<tr>
<td>6. Emotion-Oriented Coping</td>
<td></td>
</tr>
<tr>
<td>7. Avoidant Coping</td>
<td>1.18</td>
</tr>
<tr>
<td>8. Dichotomous Thinking</td>
<td></td>
</tr>
<tr>
<td>9. Regulation of Emotion</td>
<td></td>
</tr>
<tr>
<td>Family and Social Environment</td>
<td></td>
</tr>
<tr>
<td>1. Mealtime Communication-Based Stress</td>
<td></td>
</tr>
<tr>
<td>2. Mealtime Structure</td>
<td>0.74</td>
</tr>
<tr>
<td>3. Appearance Weight Control</td>
<td></td>
</tr>
<tr>
<td>4. Emphasis on Mother's Weight</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Odds Ratios for significant difference between case-control participants is presented. 
#Indicates CI90 was used, otherwise CI95 was used. 
†Cystic fibrosis case-control findings were only analyzed for Eating Behavior.
Characteristics and Disturbed Eating Severity Category as an indicator of their behaviors, but no further analyses were performed due to small sample size. Eating Concerns, Shape Concerns, Excessive Exercise, Disturbed Eating Severity category, Body Image Intense TV Viewing, Mentally and Physically Unhealthy Days, Avoidant Coping, Depression, Anxiety, Obsessive Compulsive Disorder, Weight Teasing History and Weight Teasing Effect, Type of Weight Teasing (i.e., made fun of or laughed at because of weight), and Emphasis on Mother’s Weight. Cystic fibrosis DRCHC case-control eating behavior characteristic results were somewhat similar to bowel-related DRCHC case-control significant findings with differences being the following: Eating Concerns, Shape Concerns, and Highly Disturbed Eating Severity category.

Differences between cystic fibrosis DRCHC case-control and type 1 diabetes DRCHC case-control eating behavior characteristics significant finding were Excessive Exercise and Highly Disturbed Eating Severity category. Other comparisons between cystic fibrosis DRCHC and other DRCHC groups were not possible due to the small number of participants with cystic fibrosis.

FEBS INSTRUMENTS

The Follow-up Eating Behavior Survey (FEBS) was designed to collect additional disease-specific information from participants who reported having a DRCHC in the EBS. In addition, every tenth participant without a DRCHC was invited to complete the FEBS. Of the 166 DRCHC and 250 Healthy participants invited to take the FEBS, a total of 160 participants (i.e., n=87 DRCHC, n=73 Healthy) completed the FEBS (see Figure 8). The two participants who were excluded from the EBS matching because they were
outliers (i.e., very elevated BMIs) did not complete the FEBS. Due to low response rates for FEBS, matching of participants for a case-control design was not feasible. Thus, the FEBS data reported below is only for participants with a DRCHC. However, it was important to compare the EBS DRCHC participants (n=77) who did not complete the FEBS (i.e., non-responders) and FEBS DRCHC participants (n=87; responders) to determine whether they differed on any key demographics before proceeding so this comparison is described below.

**Comparison of FEBS DRCHC Responders’ and Non-Responders’ Demographic Characteristics**

Most of FEBS DRCHC responders and non-responders had irritable bowel syndrome and celiac disease with very few having cystic fibrosis (Table 109). Additionally, about 9 percent of FEBS responders and 3 percent FEBS DRCHC non-responders had been diagnosed with an eating disorder by a healthcare provider (see Table 109). Approximately 60 percent of FEBS responders and 52 percent of non-responders followed a special diet for their health condition (Table 110).

Most of FEBS responders and non-responders were White (90% vs. 91%) (see Table 110). FEBS responders’ mean age was 21±2.05SD years and entered puberty at around 11 years of age which was similar to non-responders; however, mean age was significantly different (Table 111). That is, FEBS DRCHC responders were slightly older than non-responders. Nearly all FEBS responders and non-responders were at a healthy weight with a mean BMI of 22.19±3.65SD and 23.31±3.84SD, respectively.
Figure 8. Follow-Up Eating Behavior Survey (FEBS) Study Sample

Analysis of Follow-Up Surveys
(N=160; n=87 DRCHC and n=73 Healthy participants)

Invited Every 10th Healthy Participant

Lost to follow-up (n=177)
Response rate: 29%
Total Healthy Participants (n=73)

DRCHC Invited N=166
Type 1 Diabetes (n=21)
Celiac Disease (n=34)
Cystic Fibrosis (n=9)
Inflammatory Bowel Disease (n=25)

Lost to follow-up (response rate)
Total DRCHC N=79 (53%)
Type 1 Diabetes n=11 (48%)
Celiac Disease n=13 (62%)
Cystic Fibrosis n=3 (67%)
Inflammatory Bowel Disease n=11 (56%)
Irritable Bowel Syndrome n=40 (48%)

Total DRCHC N=87
Type 1 Diabetes (n=10)
Celiac Disease (n=21)
Cystic Fibrosis (n=5)
Inflammatory Bowel Disease (n=14)
Irritable Bowel Syndrome (n=37)
Table 109. Frequencies of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders’ and Non-Responders’ Health History, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) N (%)</th>
<th>Female FEBS DRCHC Responders (N=70) N (%)</th>
<th>Male FEBS DRCHC Responders (N=17) N (%)</th>
<th>All FEBS DRCHC Non-Responders (N=77) N (%)</th>
<th>Female FEBS DRCHC Non-Responders (N=56) N (%)</th>
<th>Male FEBS DRCHC Non-Responders (N=21) N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of a Diet-Related Chronic Health Condition by a Health Care Provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>10 (12)</td>
<td>8 (11)</td>
<td>2 (12)</td>
<td>10 (13)</td>
<td>6 (11)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>21 (24)</td>
<td>19 (27)</td>
<td>2 (12)</td>
<td>11 (14)</td>
<td>10 (18)</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>5 (6)</td>
<td>4 (6)</td>
<td>1 (6)</td>
<td>4 (5)</td>
<td>4 (7)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Inflammatory Bowel Diseases</td>
<td>14 (16)</td>
<td>10 (15)</td>
<td>4 (24)</td>
<td>10 (13)</td>
<td>3 (6)</td>
<td>7 (33)</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>37 (43)</td>
<td>29 (41)</td>
<td>8 (47)</td>
<td>42 (55)</td>
<td>33 (59)</td>
<td>9 (43)</td>
</tr>
<tr>
<td>Diagnosis of an Eating Disorder by a Health Care Provider</td>
<td>8 (9)</td>
<td>8 (11)</td>
<td>0 (0)</td>
<td>2 (3)</td>
<td>1 (2)</td>
<td>1 (5)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

Fisher’s Exact tests indicated no significant differences in characteristics between FEBS DRCHC responders and non-responders.
Table 110. Frequencies of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders’ and Non-Responders’ Characteristics, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87)</th>
<th>Female FEBS DRCHC Responders (N=70)</th>
<th>Male FEBS DRCHC Responders (N=17)</th>
<th>All EBS DRCHC Non-Responders (N=77)</th>
<th>Female FEBS DRCHC Non-Responders (N=56)</th>
<th>Male FEBS DRCHC Non-Responders (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>---</td>
<td>70 (80)</td>
<td>17 (20)</td>
<td>---</td>
<td>56 (73)</td>
<td>21 (27)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>78 (90)</td>
<td>62 (89)</td>
<td>16 (94)</td>
<td>70 (91)</td>
<td>51 (91)</td>
<td>19 (91)</td>
</tr>
<tr>
<td>Non-White</td>
<td>9 (10)</td>
<td>8 (11)</td>
<td>1 (6)</td>
<td>7 (9)</td>
<td>5 (9)</td>
<td>2 (10)</td>
</tr>
<tr>
<td><strong>Special Diet Regimen</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following a Special Diet</td>
<td>51 (59)</td>
<td>42 (60)</td>
<td>9 (53)</td>
<td>38 (49)</td>
<td>31 (55)</td>
<td>7 (33)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition  
#Fisher’s Exact tests indicated no significant differences in characteristics between FEBS DRCHC responders and non-responders.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age†</td>
<td>21.11±2.05</td>
<td>21.27±2.15</td>
<td>20.47±1.42</td>
<td>20.39±2.34</td>
<td>20.66±2.41</td>
<td>19.67±2.01</td>
</tr>
<tr>
<td>Puberty Marker (age)‡</td>
<td>11.31±1.77</td>
<td>11.21±1.54</td>
<td>11.74±2.51</td>
<td>10.99±1.58</td>
<td>10.78±1.66</td>
<td>11.56±1.22</td>
</tr>
<tr>
<td>Body Mass Index†</td>
<td>22.19±3.65</td>
<td>22.13±3.90</td>
<td>22.43±2.40</td>
<td>23.31±3.84</td>
<td>22.80±4.00</td>
<td>24.67±3.03</td>
</tr>
<tr>
<td>Current Health Status (1 to 5)‡</td>
<td>3.30±0.95</td>
<td>3.21±0.95</td>
<td>3.18±0.61</td>
<td>3.43±0.96</td>
<td>3.37±0.95</td>
<td>3.60±0.99</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

#Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.

†Mann-Whitney U Tests indicate a significant difference (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.

‡Current Health Status Likert Scale (1=Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent)
(see Table 110). However, non-responders were significantly heavier than FEBS DRCHC non-responders. Both responders and non-responders reported their health status was good to very good (see Table 111).

Results of Mann-Whitney U Tests and Chi-square analysis indicated few differences in demographic characteristics, with the significant differences being minor. Therefore, it was concluded that FEBS DRCHC responders were still similar demographically and representative of the individuals with DRCHCs who responded to the EBS, but not the FEBS.

**FEBS DRCHC Participants' Demographic Characteristics**

Of the 60 percent of FEBS DRCHC participants who followed a special diet, about 60 percent indicated they followed it very closely or closely, with very few (9%) not following the diet closely at all (Table 112). Further analysis indicated that 70 percent of type 1 diabetes FEBS participants reported following a diabetic diet and 95 percent of celiac disease participants reported following a gluten-free diet for their health condition. More than half of IBS participants (59%) reported following a special diet: lactose-free (30%), peanut-free (8%), gluten-free (8%), vegetarian diet (5%) and other (e.g., nut-free, low-fat) diet (8%). Over three-quarters of IBD participants did not report following a special diet. The few IBD participants who did follow a diet (7%) were following a lactose-free diet. Two of the five cystic fibrosis participants reported following a high calorie and high fat/high salt diet.

The average age of DRCHC diagnosis was 15±6.07SD years (see Table 112). Medical complications, due to their health condition, were reported by only 20 percent of
participants. The average age of their last serious medical complication was 19±3.09SD years indicating the complication was fairly recent (i.e., mean years since last medical complication 2.53±2.63SD). The types of medical complications reported by those with type 1 diabetes were hypoglycemia, kidney disease, and diagnosis with another DRCHC (i.e., celiac disease). Cystic fibrosis medical complications were lung infection, gastrointestinal distress, and diagnosis with another DRCHC (i.e., cystic fibrosis related diabetes). Celiac disease medical complications were gastrointestinal bleeding, food intolerances, and heart palpitations due to malnutrition. IBD medical complications were severe malnutrition, flare-ups, and anemia. IBS medical complications were food intolerances, non-rotational anomaly (i.e., twisted mid-gut), and blood in stools. One IBD participant commented that total parental nutrition (i.e., intravenous feeding [into a vein] that provides necessary nutrients when a person is unable to eat normally) was used to treat her medical complication. In addition, the complications caused many to miss school and be in the hospital for days, weeks or even months (data not reported in table).

Type 1 diabetes FEBS participants (n=10) were asked to report their most recent glycosylated hemoglobin level (i.e., HbA1c), which is used by healthcare providers to identify average plasma glucose concentration over prolonged periods of time (i.e., blood glucose control). The American Diabetes Association recommends that glycosylated hemoglobin levels be below 7.0 percent, which reflects good blood glucose control\(^{283}\). A total of 70 percent of type 1 diabetes FEBS participants reported their last glycosylated hemoglobin level being greater than or equal to 7.1 percent, which indicates poor blood glucose control (Table 113).
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Participants (N=87)</th>
<th>Female FEBS DRCHC Participants (N=70)</th>
<th>Male FEBS DRCHC Participants (N=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD *</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td>Age of Diagnosis</td>
<td>14.87±6.07 &lt;1.00-25.00</td>
<td>14.89±6.26 &lt;1.00-25.00</td>
<td>14.82±5.36 &lt;1.00-21.00</td>
</tr>
<tr>
<td>Age of last serious medical complication †</td>
<td>19.32±3.09 13.00-25.00</td>
<td>19.93±3.15 #a 13.00-25.00</td>
<td>17.00±1.41 a 15.00-18.00</td>
</tr>
<tr>
<td>Years since last serious medical complication ‡</td>
<td>2.53±2.63 0.00-8.00</td>
<td>2.67±2.58 0.00-8.00</td>
<td>3.50±3.00 0.00-6.00</td>
</tr>
<tr>
<td>How Closely Diet is Followed (1 to 5) §</td>
<td>1.20±2.05 1.00-5.00</td>
<td>1.91±1.22 1.00-5.00</td>
<td>2.56±1.01 1.00-4.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

#Means followed by the same lowercase superscript in a row are significantly different using Mann-Whitney U tests.

a p<0.05

†N=19 (n=15 for females and n=4 for males) for participants who reported a medical complication.

‡Calculated by subtracting years since last medical complication by current age.

§N=44 (n=35 for females and n=9 for males) for participants who reported following a diet. Likert Scale (1=Very Closely, 2=Closely, 3=Somewhat Closely, 4=Not Closely, 5=Not Closely At All).
<table>
<thead>
<tr>
<th>Characteristic*</th>
<th>All Type 1 Diabetes FEBS DRCHC Participants (N=10)</th>
<th>Female Type 1 Diabetes FEBS DRCHC Participants (N=8)</th>
<th>Male Type 1 Diabetes FEBS DRCHC Participants (N=2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Hemoglobin A1c Level at last check-up*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 7.1%</td>
<td>3</td>
<td>30.00</td>
<td>3</td>
</tr>
<tr>
<td>Greater than or equal to 7.1%</td>
<td>7</td>
<td>70.00</td>
<td>5</td>
</tr>
</tbody>
</table>

*The American Diabetes Association recommends that glycosylated hemoglobin levels be below 7.0 percent for better blood glucose control.  
#Fisher Exact tests indicated no significant differences in characteristics between female and male Type 1 Diabetes Mellitus FEBS participants.
Healthcare

After being diagnosed, more than half of DRCHC participants reported visiting their healthcare providers every 1 to 6 months (Table 114). The healthcare providers that participants most frequently visited (at least 2 times per year) were general physicians and gastroenterologists with a very small percentage of visits being to registered dietitians. Most participants reported they had okay to very good relationships and communications with healthcare providers at this time (Table 115). Most DRCHC participants were either satisfied or very satisfied with the healthcare treatment they received after diagnosis of their condition. Additionally, DRCHC participants seldom to never had difficulties obtaining medicine or food for their health condition when first diagnosed (Table 115). Males and females with DRCHCs were similar on all measures related to healthcare when first diagnosed with their health condition.

Currently, most FEBS DRCHC participants reported visiting their healthcare providers at least once during the past year (see Table 114), which is less often now than when they were first diagnosed. In addition, few reported visits to registered dietitians now compared with when they were first diagnosed. Of the DRCHC participants who reported visiting a registered dietitian at some point in their lives (39%), in the past year the majority had seen a registered dietitian only once (Table 116).

Relationships and communications with their healthcare team are currently reported to be okay to very good (see Table 115). Overall, participants were either satisfied or very satisfied with the treatment received from their healthcare providers during the past year. Additionally, in the past year, DRCHC participants seldom had difficulties obtaining medicine or food for their health condition (see Table 115). Few
significant differences occurred between male and female participants, with regard to their current healthcare treatment.

The majority of DRCHC participants (75%) also had never received any information from a healthcare professional about eating disorders (Table 117). Of the few who had received information on eating disorders, most were given this information by their general physician. In general, participants felt rather knowledgeable about their health condition (Table 118). Additionally, their mean satisfaction knowledge rating score indicated that participants were satisfied with this knowledge.
Table 114. Frequency of Visits with Healthcare Providers After Diagnosis and Currently in Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Healthcare Visits When First Diagnosed in FEBS DRCHC Participants</th>
<th>Current Healthcare Visits in FEBS DRCHC Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Participants</td>
<td>Female Participants</td>
</tr>
<tr>
<td>N=87</td>
<td>N=70</td>
</tr>
</tbody>
</table>

**Frequency of Healthcare Visits**

<table>
<thead>
<tr>
<th>Type of Visit</th>
<th>All Participants</th>
<th>Female Participants</th>
<th>Male Participants</th>
<th>All Participants</th>
<th>Female Participants</th>
<th>Male Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>6 (7)</td>
<td>6 (9)</td>
<td>0 (0)</td>
<td>20 (23)</td>
<td>16 (23)</td>
<td>4 (24)</td>
</tr>
<tr>
<td>About 1 time per week</td>
<td>8 (9)</td>
<td>5 (7)</td>
<td>3 (18)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>About 1 time per month</td>
<td>21 (24)</td>
<td>16 (23)</td>
<td>5 (29)</td>
<td>7 (8)</td>
<td>6 (9)</td>
<td>1 (6)</td>
</tr>
<tr>
<td>About every 3 months</td>
<td>21 (24)</td>
<td>18 (26)</td>
<td>3 (18)</td>
<td>16 (18)</td>
<td>14 (20)</td>
<td>2 (12)</td>
</tr>
<tr>
<td>About every 6 months</td>
<td>12 (14)</td>
<td>12 (17)</td>
<td>0 (0)</td>
<td>16 (18)</td>
<td>12 (17)</td>
<td>4 (24)</td>
</tr>
<tr>
<td>About 1 time per year</td>
<td>8 (9)</td>
<td>5 (7)</td>
<td>3 (18)</td>
<td>24 (28)</td>
<td>18 (26)</td>
<td>6 (35)</td>
</tr>
<tr>
<td>Not sure/can't remember</td>
<td>8 (9)</td>
<td>6 (9)</td>
<td>2 (12)</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Other</td>
<td>3 (3)</td>
<td>2 (3)</td>
<td>1 (6)</td>
<td>3 (3)</td>
<td>3 (4)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

**Type of Healthcare Providers Visited at least 2x/year**

<table>
<thead>
<tr>
<th>Type of Healthcare Providers Visited</th>
<th>All Participants</th>
<th>Female Participants</th>
<th>Male Participants</th>
<th>All Participants</th>
<th>Female Participants</th>
<th>Male Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Physician</td>
<td>51 (59)</td>
<td>41 (59)</td>
<td>10 (59)</td>
<td>50 (58)</td>
<td>41 (59)</td>
<td>9 (53)</td>
</tr>
<tr>
<td>Endocrinologist</td>
<td>11 (13)</td>
<td>9 (13)</td>
<td>2 (12)</td>
<td>12 (14)</td>
<td>10 (14)</td>
<td>2 (12)</td>
</tr>
<tr>
<td>Nurse</td>
<td>8 (9)</td>
<td>7 (10)</td>
<td>1 (6)</td>
<td>7 (8)</td>
<td>5 (7)</td>
<td>2 (12)</td>
</tr>
<tr>
<td>Registered Dietitian</td>
<td>15 (17)</td>
<td>13 (19)</td>
<td>2 (12)</td>
<td>7 (8)</td>
<td>5 (7)</td>
<td>2 (12)</td>
</tr>
<tr>
<td>Psychologist</td>
<td>9 (10)</td>
<td>7 (10)</td>
<td>2 (12)</td>
<td>14 (16)</td>
<td>14 (20)</td>
<td>#a 0 (0)</td>
</tr>
<tr>
<td>Gastroenterologist</td>
<td>51 (59)</td>
<td>41 (59)</td>
<td>10 (59)</td>
<td>24 (28)</td>
<td>19 (27)</td>
<td>5 (29)</td>
</tr>
<tr>
<td>Ophthalmologist (Eye Doctor)</td>
<td>7 (8)</td>
<td>6 (9)</td>
<td>1 (6)</td>
<td>10 (12)</td>
<td>8 (11)</td>
<td>2 (12)</td>
</tr>
<tr>
<td>Podiatrist (Foot doctor)</td>
<td>1 (1)</td>
<td>1 (1)</td>
<td>0 (0)</td>
<td>2 (2)</td>
<td>1 (1)</td>
<td>1 (6)</td>
</tr>
<tr>
<td>None of the above or Not sure/can't remember</td>
<td>9 (10)</td>
<td>9 (13)</td>
<td>0 (0)</td>
<td>15 (17)</td>
<td>10 (14)</td>
<td>5 (29)</td>
</tr>
<tr>
<td>Other (e.g., Dentist, Pulmonologist)</td>
<td>6 (7)</td>
<td>5 (7)</td>
<td>1 (6)</td>
<td>8 (9)</td>
<td>7 (10)</td>
<td>1 (6)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

Numbers followed by the same lowercase superscript in a row are significantly different using Mann-Whitney U tests and Fisher’s Exact Tests.

*a p<0.05
Table 115. Mean Scores for Type of Care Received and Barriers to Following Healthcare Providers’ Advice After Being Diagnosed and Currently in Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>Type of Care After Being Diagnosed</th>
<th>Type of Care Currently</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Participants N=87 Mean±SD*</td>
<td>Female Participants N=70 Mean±SD</td>
</tr>
<tr>
<td>Relationship with Healthcare Team (1 to 5)†</td>
<td>2.44±0.99</td>
<td>2.48±0.98</td>
</tr>
<tr>
<td>Communication with Healthcare Team (1 to 5)†</td>
<td>2.46±0.98</td>
<td>2.48±0.91</td>
</tr>
<tr>
<td>Satisfaction with Treatment (1 to 5)‡</td>
<td>3.00±1.22</td>
<td>3.06±1.16</td>
</tr>
<tr>
<td>Cost of Medicine Barrier (1 to 5)§</td>
<td>4.48±0.98</td>
<td>4.54±0.89</td>
</tr>
<tr>
<td>Cost of Specialized Food Barrier (1 to 5)¶</td>
<td>4.42±1.04</td>
<td>4.49±0.96</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation
†Mann-Whitney U Tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
‡N=78 After Being Diagnosed (n=64 for females and n=14 for males) as 9 were unsure and N=78 Currently (n=63 for females and n=15 for males) as 9 were unsure; Likert Scales (1=Very Good, 2=Good, 3=Okay, 4=Bad, 5=Very Bad).
§N=81 After Being Diagnosed (n=65 for females and n=16 for males) as 6 were unsure and N=80 Currently (n=66 for females and n=14 for males) as 7 were unsure; Likert Scale (1=Very Satisfied, 2=Satisfied, 3=Neither Satisfied nor Dissatisfied, 4=Dissatisfied, 5=Very Dissatisfied).
¶N=84 After Being Diagnosed (n=67 for females and n=17 for males) as 3 were unsure and N=79 Currently (n=63 for females and n=14 for males) as 24 were unsure; Likert Scale (1=All of the time, 2=Often, 3=Sometimes, 4=Seldom, 5=Never).
¥N=83 After Being Diagnosed (n=66 for females and n=17 for males) as 4 were unsure and N=72 Currently (n=58 for females and n=14 for males) as 15 were unsure; Likert Scale (1=All of the time, 2=Often, 3=Sometimes, 4=Seldom, 5=Never).
Table 116. Self-Report Visits with a Registered Dietitian in Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Registered Dietitian Visits†</th>
<th>All FEBS DRCHC Participants N=87#</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Visits with a Registered Dietitian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>34</td>
<td>39.08</td>
<td>31</td>
</tr>
<tr>
<td>No</td>
<td>50</td>
<td>57.47</td>
<td>37</td>
</tr>
<tr>
<td>Not sure/can't remember</td>
<td>3</td>
<td>3.45</td>
<td>2</td>
</tr>
<tr>
<td>Frequency of Registered Dietitian Visits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>9.20</td>
<td>8</td>
</tr>
<tr>
<td>About once per month</td>
<td>2</td>
<td>2.30</td>
<td>2</td>
</tr>
<tr>
<td>About 6 times/year</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>About 3 times/year</td>
<td>5</td>
<td>5.75</td>
<td>4</td>
</tr>
<tr>
<td>About 1 time/year</td>
<td>12</td>
<td>13.79</td>
<td>11</td>
</tr>
<tr>
<td>About every two years</td>
<td>5</td>
<td>5.75</td>
<td>4</td>
</tr>
<tr>
<td>Other†</td>
<td>3</td>
<td>3.45</td>
<td>3</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
#Except for Frequency of Registered Dietitian Visits N=35 (n=32 for females and n=32 for males).
†Other category includes family members that are Registered Dietitians and only visited one time after being diagnosed.
‡Fishers Exact tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
Table 117. Percent of Healthcare Providers Dispensing Eating Disorder Information in Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Participants N=87#</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Received Information on Eating Disorders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>24.14</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>64</td>
<td>73.56</td>
<td>51</td>
</tr>
<tr>
<td>Not sure/can't remember</td>
<td>2</td>
<td>2.30</td>
<td>2</td>
</tr>
<tr>
<td>Type of Healthcare Provider that Dispensed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Disorder Information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Physician</td>
<td>13</td>
<td>14.94</td>
<td>10</td>
</tr>
<tr>
<td>Endocrinologist</td>
<td>2</td>
<td>2.30</td>
<td>2</td>
</tr>
<tr>
<td>Nurse</td>
<td>1</td>
<td>1.15</td>
<td>1</td>
</tr>
<tr>
<td>Registered Dietitian</td>
<td>4</td>
<td>4.60</td>
<td>3</td>
</tr>
<tr>
<td>Psychologist</td>
<td>3</td>
<td>3.45</td>
<td>3</td>
</tr>
<tr>
<td>Gastroenterologist</td>
<td>7</td>
<td>8.05</td>
<td>4</td>
</tr>
<tr>
<td>Ophthalmologist (Eye Doctor)</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Podiatrist (Foot doctor)</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Not sure/can't remember</td>
<td>3</td>
<td>3.45</td>
<td>3</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
\#Except for Type of Healthcare Provider that Dispensed Eating Disorder Information N=21 (n=17 for females and n=4 for males).
\‡Fisher Exact tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
### Table 118. Current Knowledge and Satisfaction with Health Condition and/or General Health in Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All FEBS DRCHC Participants N=87</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Health Knowledge (1 to 5)</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td></td>
<td>1.86±0.86 1.00-5.00</td>
<td>1.80±0.79 1.00-4.00</td>
<td>2.12±1.11 1.00-5.00</td>
</tr>
<tr>
<td>Satisfaction with Current Health Knowledge (1 to 5)</td>
<td>2.09±0.90 1.00-4.00</td>
<td>2.07±0.91 1.00-4.00</td>
<td>2.18±0.89 1.00-4.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

‡Likert Scale (1=Very Knowledgeable, 2=Knowledgeable, 3=Somewhat Knowledgeable, 4=Not Very Knowledgeable, 5=Not Knowledgeable At All).

†Likert Scale (1=Very Satisfied, 2=Satisfied, 3=Neither Satisfied nor Dissatisfied, 4=Dissatisfied, 5=Very Dissatisfied).

‡Mann-Whitney U Tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
Comparison of FEBS DRCHC Responders’ and Non-Responders’ Psychographic Characteristics

A comparison of FEBS DRCHC non-responders’ (n=77) and responders’ (n=87) psychographic characteristics collected in the EBS, using Mann-Whitney U tests for continuous variables and Chi-Square and Fisher’s Exact tests for categorical variables, indicated significant differences on the following measures: Inappropriate Compensatory Behaviors, Disturbed Eating Behavior Severity Score, Weight Teasing Frequency, Number of Weight Teasing Insults, Types of Weight Teasing Comments (i.e., being laughed at and/or name called), Information from Media, and Perceived Weight Status at 10th grade and now. That is, FEBS DRCHC non-responders were significantly more likely to have higher Disturbed Eating Severity scores and use inappropriate compensatory behaviors to control their weight (Tables 119 and 126) than FEBS DRCHC responders. In addition, FEBS DRCHC non-responders perceived their weight as being heavier in 10th grade and currently compared with FEBS DRCHC responders (Table 120). They also were significantly more likely to be weight teased as a child, experiencing a greater number of types of insults (i.e., be laughed at and/or name called fatso) than FEBS DRCHC responders (Tables 121 and 122). Information from the media promoting physical attractiveness had a significantly greater effect on FEBS DRCHC non-responders than FEBS DRCHC responders (see Table 122). There were no significant differences in the frequencies of using body image intense media (Tables 123 and 124), intrapersonal characteristics (Table 125) or any childhood family mealtime experience scales (Table 126), along with any other psychographic characteristic not mentioned already above. Thus, FEBS DRCHC responders and non-responders differed
on some psychographic characteristics with all of these differences in scores being higher in FEBS DRCHC non-responders.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating Disorder Examination Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Concerns (0 to 6)</td>
<td>0.84±1.21</td>
<td>0.94±1.28</td>
<td>0.44±0.80</td>
<td>1.03±1.09</td>
<td>1.13±1.14</td>
<td>0.78±0.93</td>
</tr>
<tr>
<td>Restraint (0 to 6)</td>
<td>1.18±1.51</td>
<td>1.23±1.54</td>
<td>0.96±1.38</td>
<td>1.50±1.49</td>
<td>1.61±1.58</td>
<td>1.21±1.24</td>
</tr>
<tr>
<td>Binge Eating (0 to 28)</td>
<td>1.68±4.61</td>
<td>1.75±4.96</td>
<td>1.35±2.83</td>
<td>2.20±4.03</td>
<td>2.21±4.00</td>
<td>2.19±4.21</td>
</tr>
<tr>
<td>Inappropriate Compensatory Behaviors Score (0 to 6)</td>
<td>0.27±0.72</td>
<td>0.25±0.67</td>
<td>0.37±0.92</td>
<td>0.66±1.27</td>
<td>0.76±1.42</td>
<td>0.41±0.72</td>
</tr>
<tr>
<td>Self-Induced Vomiting (0 to 6)</td>
<td>0.13±0.71</td>
<td>0.04±0.27</td>
<td>0.47±1.50</td>
<td>0.51±1.55</td>
<td>0.64±1.78</td>
<td>0.14±0.65</td>
</tr>
<tr>
<td>Medicine Misuse (0 to 6)</td>
<td>0.20±0.83</td>
<td>0.17±0.83</td>
<td>0.29±0.85</td>
<td>0.53±1.58</td>
<td>0.64±1.78</td>
<td>0.24±0.77</td>
</tr>
<tr>
<td>Excessive Exercise (0 to 6)</td>
<td>0.68±1.36</td>
<td>0.69±1.46</td>
<td>0.65±0.86</td>
<td>0.92±1.47</td>
<td>0.96±1.45</td>
<td>0.81±1.66</td>
</tr>
<tr>
<td>Global EDE-Q Score (0 to 6)</td>
<td>1.47±1.36</td>
<td>1.57±1.44</td>
<td>1.22±1.04</td>
<td>1.77±1.33</td>
<td>1.92±1.37</td>
<td>1.35±1.14</td>
</tr>
<tr>
<td><strong>Three-Factor Eating Questionnaire-18</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Eating (1 to 4)</td>
<td>2.03±0.77</td>
<td>2.06±0.76</td>
<td>1.88±0.80</td>
<td>2.07±0.77</td>
<td>2.18±0.78</td>
<td>1.78±0.66</td>
</tr>
<tr>
<td>Disinhibited Eating (1 to 4)</td>
<td>2.10±0.61</td>
<td>2.10±0.55</td>
<td>2.06±0.81</td>
<td>2.09±0.69</td>
<td>2.07±0.66</td>
<td>2.16±0.77</td>
</tr>
<tr>
<td><strong>Night Eating Severity</strong> (0 to 30)</td>
<td>2.17±5.52</td>
<td>1.74±4.73</td>
<td>3.94±7.95</td>
<td>2.01±5.56</td>
<td>1.80±5.56</td>
<td>2.57±5.67</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation
*Mann-Whitney U Tests indicate a significant difference (p≤0.05) in characteristics between All FEBS DRCHC responders and non-responders.
Table 120. Mean Shape and Weight Concerns, Physical Appearance, Body Image Distortion, and Perception of Body Weight Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating Disorder Examination Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shape Concerns (0 to 6)</td>
<td>2.14±1.66</td>
<td>2.29±1.73</td>
<td>1.55±1.20</td>
<td>2.46±1.74</td>
<td>2.67±1.75</td>
<td>1.89±1.61</td>
</tr>
<tr>
<td>Weight Concerns (0 to 6)</td>
<td>1.71±1.58</td>
<td>1.83±1.67</td>
<td>1.26±1.09</td>
<td>2.08±1.67</td>
<td>2.28±1.74</td>
<td>1.53±1.35</td>
</tr>
<tr>
<td><strong>Appearance Schema Inventory-Revised</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Evaluative Salience (1 to 5)</td>
<td>3.25±0.75</td>
<td>3.26±0.76</td>
<td>3.21±0.73</td>
<td>3.28±0.80</td>
<td>3.28±0.84</td>
<td>3.29±0.70</td>
</tr>
<tr>
<td>Motivational Salience (1 to 5)</td>
<td>3.58±0.67</td>
<td>3.54±0.68</td>
<td>3.78±0.60</td>
<td>3.58±0.69</td>
<td>3.57±0.65</td>
<td>3.60±0.80</td>
</tr>
<tr>
<td><strong>Body Image Distortion (-2 to 2)</strong>†</td>
<td>0.76±0.65</td>
<td>0.80±0.65</td>
<td>0.59±0.62</td>
<td>0.91±0.65</td>
<td>0.98±0.67</td>
<td>0.71±0.56</td>
</tr>
<tr>
<td><strong>Weight in 1st grade (1 to 3)</strong></td>
<td>1.53±0.64</td>
<td>1.51±0.63</td>
<td>1.59±0.71</td>
<td>1.53±0.68</td>
<td>1.66±0.72</td>
<td>1.19±0.40</td>
</tr>
<tr>
<td><strong>Weight in 6th grade (1 to 3)</strong></td>
<td>1.78±0.80</td>
<td>1.81±0.80</td>
<td>1.65±0.79</td>
<td>1.84±0.86</td>
<td>1.96±0.85</td>
<td>1.52±0.81</td>
</tr>
<tr>
<td><strong>Weight in 10th grade (1 to 3)</strong>‡</td>
<td>1.60±0.69</td>
<td>1.63±0.71</td>
<td>1.47±0.62</td>
<td>1.81±0.74</td>
<td>1.88±0.72</td>
<td>1.67±0.80</td>
</tr>
<tr>
<td><strong>Current Weight (1 to 3)</strong>‡</td>
<td>1.85±0.67</td>
<td>1.90±0.66</td>
<td>1.65±0.70</td>
<td>2.09±0.71</td>
<td>2.07±0.71</td>
<td>2.14±0.72</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

†Mann-Whitney U Tests indicate a significant difference (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.
†Defined as perceived body weight score minus actual body weight category. Means closer to zero indicate body weight is perceived accurately. Positive values indicate that individuals perceived they were heavier than they actually were whereas negative values indicate that individuals perceived they weighed less than they actually did.
Table 121. Frequencies of Perceptions of Body Weight Over Time & Weight Teasing Frequency of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) N (%)</th>
<th>Female FEBS DRCHC Responders (N=70) N (%)</th>
<th>Male FEBS DRCHC Responders (N=17) N (%)</th>
<th>All FEBS DRCHC Non-Responders (N=77) N (%)</th>
<th>Female FEBS DRCHC Non-Responders (N=56) N (%)</th>
<th>Male FEBS DRCHC Non-Responders (N=21) N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight in 1st grade (about age 6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>48 (55)</td>
<td>39 (56)</td>
<td>9 (53)</td>
<td>44 (57)</td>
<td>27 (48)</td>
<td>17 (81)</td>
</tr>
<tr>
<td>Average</td>
<td>32 (37)</td>
<td>26 (37)</td>
<td>6 (35)</td>
<td>25 (33)</td>
<td>21 (38)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>7 (8)</td>
<td>5 (7)</td>
<td>2 (12)</td>
<td>8 (10)</td>
<td>8 (14)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Weight in 6th grade (about age 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>39 (45)</td>
<td>30 (43)</td>
<td>9 (53)</td>
<td>35 (46)</td>
<td>21 (38)</td>
<td>14 (67)</td>
</tr>
<tr>
<td>Average</td>
<td>28 (32)</td>
<td>23 (33)</td>
<td>5 (29)</td>
<td>19 (25)</td>
<td>16 (29)</td>
<td>3 (14)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>20 (23)</td>
<td>17 (24)</td>
<td>3 (18)</td>
<td>23 (30)</td>
<td>19 (34)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Weight in 10th grade (about age 16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>45 (52)</td>
<td>35 (50)</td>
<td>10 (59)</td>
<td>29 (38)</td>
<td>18 (32)</td>
<td>11 (52)</td>
</tr>
<tr>
<td>Average</td>
<td>32 (37)</td>
<td>26 (37)</td>
<td>6 (35)</td>
<td>33 (43)</td>
<td>27 (48)</td>
<td>6 (29)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>10 (12)</td>
<td>9 (13)</td>
<td>1 (6)</td>
<td>15 (20)</td>
<td>11 (20)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Current Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very thin or thin</td>
<td>27 (31)</td>
<td>19 (27)</td>
<td>8 (47)</td>
<td>16 (21)</td>
<td>12 (21)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Average</td>
<td>46 (53)</td>
<td>39 (56)</td>
<td>7 (41)</td>
<td>38 (49)</td>
<td>28 (50)</td>
<td>10 (48)</td>
</tr>
<tr>
<td>Slightly heavy or overweight</td>
<td>14 (16)</td>
<td>12 (17)</td>
<td>2 (12)</td>
<td>23 (30)</td>
<td>16 (29)</td>
<td>7 (33)</td>
</tr>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Types of Weight Teasing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made Fun of Because of Weight</td>
<td>38 (44)</td>
<td>32 (46)</td>
<td>6 (35)</td>
<td>45 (58)</td>
<td>35 (63)</td>
<td>10 (48)</td>
</tr>
<tr>
<td>Laughed At Because of Weight</td>
<td>22 (25)</td>
<td>19 (27)</td>
<td>3 (18)</td>
<td>34 (44)</td>
<td>26 (46)</td>
<td>8 (38)</td>
</tr>
<tr>
<td>Name Called (e.g., Fatso)</td>
<td>13 (15)</td>
<td>11 (16)</td>
<td>2 (12)</td>
<td>29 (38)</td>
<td>21 (38)</td>
<td>8 (38)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

Chi-Square and/or Fisher’s Exact Tests indicate a significant difference (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Teasing Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Teasing History (1 to 5)‡</td>
<td>1.59±0.99</td>
<td>1.62±0.99</td>
<td>1.45±1.01</td>
<td>2.01±1.14</td>
<td>2.00±1.09</td>
<td>2.05±1.30</td>
</tr>
<tr>
<td>Weight Teasing Effect (1 to 5)†</td>
<td>3.60±1.32</td>
<td>3.74±1.29</td>
<td>2.86±1.28</td>
<td>3.62±1.17</td>
<td>3.79±1.14</td>
<td>3.09±1.15</td>
</tr>
<tr>
<td>Total Number of Types of Weight Teasing Insults (0-3)‡</td>
<td>0.84±1.11</td>
<td>0.89±1.12</td>
<td>0.65±1.06</td>
<td>1.40±1.29</td>
<td>1.46±1.28</td>
<td>1.24±1.34</td>
</tr>
<tr>
<td>Sociocultural Attitudes Towards Appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures-Media (1 to 5)</td>
<td>3.18±1.14</td>
<td>3.26±1.15</td>
<td>2.84±1.02</td>
<td>3.31±1.03</td>
<td>3.48±1.07</td>
<td>2.87±0.75</td>
</tr>
<tr>
<td>Internalization-General (1 to 5)</td>
<td>3.08±1.30</td>
<td>3.04±1.33</td>
<td>3.24±1.15</td>
<td>3.26±1.27</td>
<td>3.36±1.27</td>
<td>3.00±1.26</td>
</tr>
<tr>
<td>Information-Media (1 to 5)‡</td>
<td>2.32±0.88</td>
<td>2.68±0.87</td>
<td>2.40±0.92</td>
<td>3.01±0.88</td>
<td>3.11±0.93</td>
<td>2.75±0.72</td>
</tr>
<tr>
<td>Patient Health Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression (0 to 24)</td>
<td>7.01±5.95</td>
<td>7.10±6.06</td>
<td>6.65±5.62</td>
<td>6.95±4.97</td>
<td>6.82±4.74</td>
<td>7.29±5.62</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (0 to 21)</td>
<td>6.59±5.37</td>
<td>6.64±5.42</td>
<td>6.35±5.30</td>
<td>7.06±5.61</td>
<td>7.48±5.67</td>
<td>5.95±5.44</td>
</tr>
<tr>
<td>Florida Obsessive Compulsive Inventory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsessive Compulsive Disorder Severity (0 to 20)‡</td>
<td>5.94±4.02</td>
<td>6.11±3.88</td>
<td>5.36±4.67</td>
<td>6.81±3.45</td>
<td>6.61±3.62</td>
<td>7.50±2.83</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

‡Mann-Whitney U Tests indicate a significant difference (p≤0.05) in characteristics between All FEBS DRCHC responders and non-responders.

†N=38 FEBS DRCHC responders (n=32 females and n=6 males) and N=47 FEBS DRCHC non-responders (n=36 females and n=11 males) for those who were weight teased.

‡N=49 FEBS DRCHC responders (n=38 females and n=11 males) and N=36 FEBS DRCHC non-responders (n=28 females and n=8 males) for only those who reported OCD type behaviors.
Table 123. Frequencies with Use of Body Image Intense Media of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87)</th>
<th>Female FEBS DRCHC Responders (N=70)</th>
<th>Male FEBS DRCHC Responders (N=17)</th>
<th>All FEBS DRCHC Non-Responders (N=77)</th>
<th>Female FEBS DRCHC Non-Responders (N=56)</th>
<th>Male FEBS DRCHC Non-Responders (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Number of Favorite TV Programs that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 TV Show</td>
<td>14 (16)</td>
<td>13 (19)</td>
<td>1 (6)</td>
<td>15 (20)</td>
<td>13 (23)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>2 TV Shows</td>
<td>2 (2)</td>
<td>2 (3)</td>
<td>0 (0)</td>
<td>6 (8)</td>
<td>6 (11)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Number of Favorite Magazines that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Magazine</td>
<td>25 (29)</td>
<td>23 (33)</td>
<td>2 (12)</td>
<td>29 (38)</td>
<td>23 (41)</td>
<td>6 (29)</td>
</tr>
<tr>
<td>2 Magazines</td>
<td>18 (21)</td>
<td>17 (24)</td>
<td>1 (6)</td>
<td>21 (27)</td>
<td>18 (32)</td>
<td>3 (14)</td>
</tr>
<tr>
<td>Number of Favorite Websites that were Body Image Intense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Internet Website</td>
<td>67 (77)</td>
<td>59 (84)</td>
<td>8 (47)</td>
<td>59 (77)</td>
<td>47 (84)</td>
<td>12 (57)</td>
</tr>
<tr>
<td>2 Internet Websites</td>
<td>3 (3)</td>
<td>2 (3)</td>
<td>1 (6)</td>
<td>1 (1)</td>
<td>1 (2)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Fisher Exact Tests indicate no significant differences (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.
Table 124. Mean Body Image Intense Media Viewing Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Participants (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Participants (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Participants (N=17) Mean±SD</th>
<th>All EBS DRCHC Participants (N=77) Mean±SD</th>
<th>Female EBS DRCHC Participants (N=56) Mean±SD</th>
<th>Male EBS DRCHC Participants (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image Intense TV Viewing (0 to 2)</td>
<td>0.21±0.46</td>
<td>0.24±0.49</td>
<td>0.06±0.24</td>
<td>0.35±0.62</td>
<td>0.45±0.69</td>
<td>0.10±0.30</td>
</tr>
<tr>
<td>Body Image Intense Magazine Viewing (0 to 2)</td>
<td>0.70±0.79</td>
<td>0.81±0.80</td>
<td>0.24±0.56</td>
<td>0.92±0.79</td>
<td>1.05±0.77</td>
<td>0.57±0.75</td>
</tr>
<tr>
<td>Body Image Intense Website Viewing (0 to 2)</td>
<td>0.84±0.45</td>
<td>0.90±0.39</td>
<td>0.59±0.62</td>
<td>0.79±0.44</td>
<td>0.88±0.38</td>
<td>0.57±0.51</td>
</tr>
<tr>
<td>Total Body Image Intense Media Score (0 to 6)</td>
<td>1.75±0.65</td>
<td>1.96±1.23</td>
<td>0.88±0.70</td>
<td>2.06±1.32</td>
<td>2.38±1.24</td>
<td>1.24±1.18</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

*Mann-Whitney U Tests indicate no significant differences (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders
Table 125. Mean Intrapersonal Behavior Characteristics & Disturbed Eating Severity Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosenberg Self-Esteem</td>
<td>2.41±0.98</td>
<td>2.50±1.00</td>
<td>2.01±0.85</td>
<td>2.39±0.94</td>
<td>2.40±0.93</td>
<td>2.38±0.99</td>
</tr>
<tr>
<td>Health Value (1 to 5)</td>
<td>3.58±0.80</td>
<td>3.61±0.77</td>
<td>3.34±0.92</td>
<td>3.36±0.67</td>
<td>3.36±0.73</td>
<td>3.37±0.53</td>
</tr>
<tr>
<td>Mentally Unhealthy Days (0 to 30)</td>
<td>6.30±8.22</td>
<td>6.59±8.52</td>
<td>5.12±7.00</td>
<td>6.00±8.22</td>
<td>6.93±8.52</td>
<td>3.52±6.93</td>
</tr>
<tr>
<td>Center for Disease Control-Quality of Life</td>
<td>4.03±0.70</td>
<td>4.02±0.68</td>
<td>4.08±0.80</td>
<td>3.97±0.74</td>
<td>4.00±0.74</td>
<td>3.90±0.78</td>
</tr>
<tr>
<td>Coping Inventory for Stressful Situations</td>
<td>2.80±1.05</td>
<td>2.85±1.03</td>
<td>2.61±1.13</td>
<td>2.95±1.02</td>
<td>2.89±1.00</td>
<td>3.11±1.09</td>
</tr>
<tr>
<td>Task-Oriented Coping (1 to 5)</td>
<td>3.40±1.34</td>
<td>3.57±1.34</td>
<td>2.71±1.16</td>
<td>3.65±1.11</td>
<td>3.80±1.03</td>
<td>3.24±1.22</td>
</tr>
<tr>
<td>Avoidant Coping (1 to 5)</td>
<td>2.92±0.58</td>
<td>2.95±0.58</td>
<td>2.82±0.61</td>
<td>2.84±0.80</td>
<td>2.83±0.76</td>
<td>2.86±1.06</td>
</tr>
<tr>
<td>Dichotomous Thinking in Eating Disorders Scale†</td>
<td>20.91±4.75</td>
<td>20.64±4.77</td>
<td>22±4.62</td>
<td>19.83±5.04</td>
<td>19.70±4.85</td>
<td>20.19±5.62</td>
</tr>
<tr>
<td>Wag &amp; Law Emotional Intelligence Scale</td>
<td>3.24±4.01</td>
<td>3.36±4.05</td>
<td>2.76±3.92</td>
<td>4.65±4.14</td>
<td>5.02±4.36</td>
<td>3.67±3.40</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation
†Mann-Whitney U Tests indicate a significant difference (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.
N=35 FEBS DRCHC responders (n=28 females and n=7 males) and N=38 FEBS DRCHC non-responders (n=31 females and n=7 males) for only those who reported dieting.
Table 125. Mean Intrapersonal Behavior Characteristics & Disturbed Eating Severity Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All FEBS DRCHC Responders (N=87) Mean±SD*</th>
<th>Female FEBS DRCHC Responders (N=70) Mean±SD</th>
<th>Male FEBS DRCHC Responders (N=17) Mean±SD</th>
<th>All FEBS DRCHC Non-Responders (N=77) Mean±SD</th>
<th>Female FEBS DRCHC Non-Responders (N=56) Mean±SD</th>
<th>Male FEBS DRCHC Non-Responders (N=21) Mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosenberg Self-Esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem (1 to 5)</td>
<td>2.41±0.98</td>
<td>2.50±1.00</td>
<td>2.01±0.85</td>
<td>2.39±0.94</td>
<td>2.40±0.93</td>
<td>2.38±0.99</td>
</tr>
<tr>
<td>Health Value (1 to 5)</td>
<td>3.58±0.80</td>
<td>3.61±0.77</td>
<td>3.34±0.92</td>
<td>3.36±0.67</td>
<td>3.36±0.73</td>
<td>3.37±0.53</td>
</tr>
<tr>
<td>Center for Disease Control-Quality of Life</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physically Unhealthy Days (0 to 30)</td>
<td>6.30±8.22</td>
<td>6.59±8.52</td>
<td>5.12±7.00</td>
<td>6.00±8.22</td>
<td>6.93±8.52</td>
<td>3.52±6.93</td>
</tr>
<tr>
<td>Coping Inventory for Stressful Situations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task-Oriented Coping (1 to 5)</td>
<td>4.03±0.70</td>
<td>4.02±0.68</td>
<td>4.08±0.80</td>
<td>3.97±0.74</td>
<td>4.00±0.74</td>
<td>3.90±0.78</td>
</tr>
<tr>
<td>Emotion-Oriented Coping (1 to 5)</td>
<td>2.80±1.05</td>
<td>2.85±1.03</td>
<td>2.61±1.13</td>
<td>2.95±1.02</td>
<td>2.89±1.00</td>
<td>3.11±1.09</td>
</tr>
<tr>
<td>Avoidant Coping (1 to 5)</td>
<td>3.40±1.34</td>
<td>3.57±1.34</td>
<td>2.71±1.16</td>
<td>3.65±1.11</td>
<td>3.80±1.03</td>
<td>3.24±1.22</td>
</tr>
<tr>
<td>Dichotomous Thinking in Eating Disorders Scale†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichotomous Eating Scale (1 to 4)</td>
<td>2.92±0.58</td>
<td>2.95±0.58</td>
<td>2.82±0.61</td>
<td>2.84±0.80</td>
<td>2.83±0.76</td>
<td>2.86±1.06</td>
</tr>
<tr>
<td>Wong &amp; Law Emotional Intelligence Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulation of Emotion (7 to 28)</td>
<td>20.91±4.75</td>
<td>20.64±4.77</td>
<td>22±4.62</td>
<td>19.83±5.04</td>
<td>19.70±4.85</td>
<td>20.19±5.62</td>
</tr>
<tr>
<td>Disturbed Eating Severity Score (0-18)‡</td>
<td>3.24±4.01</td>
<td>3.36±4.05</td>
<td>2.76±3.92</td>
<td>4.65±4.14</td>
<td>5.02±4.36</td>
<td>3.67±3.40</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

†Mann-Whitney U Tests indicate a significant difference (p<0.05) in characteristics between All FEBS DRCHC responders and non-responders.

‡N=35 FEBS DRCHC responders (n=28 females and n=7 males) and N=38 FEBS DRCHC non-responders (n=31 females and n=7 males) for only those who reported dieting.
FEBS Psychographic Instruments’ Internal Consistency Scores. Cronbach-\(\alpha\) internal consistency scores were computed using all DRCHC FEBS participants (n=87). Internal consistency scores for all psychographic measurements on the five variations of the Follow-Up Eating Behavior Surveys (FEBS) were acceptable to good (i.e., ranged from 0.57 to 0.94), except for Psychological and Somatic Perception of Illness scale (0.48) (Table 127). Low internal consistency scores on this scale are most likely due to the small number of items on the scale and the low variances typically found with dichotomous responses (e.g., yes or no).

Coping Mechanisms. The Brief COPE explored coping mechanisms participants used when faced with a difficult situation (Table 128). DRCHC FEBS participants used the following coping mechanisms most often when faced with a problem were Active Coping, Planning, and Acceptance Coping. The coping mechanisms used least often were Denial, Substance Abuse, Behavioral Disengagement, and Religion. There were no significant gender differences between coping scale scores.

Abnormal Illness Behaviors. DRCHC participants scored low on all abnormal illness behavior scales indicating they exhibited very few abnormal illness behaviors (Table 129). The highest of all abnormal illness behavior scores was Affective Inhibition (i.e., hard time expressing personal feelings), with these behaviors occurring in nearly half of the participants. Significantly more females than males scored higher on General Hypochondria (e.g., Are you afraid of illness?), whereas males scored significantly higher on Affective Inhibition (e.g., Do you prefer to keep your feeling to yourself?).
Healthy Eating Self-Efficacy. DRCHC participants had high Healthy Eating Self-Efficacy mean scores (Table 130). Thus, participants were rather certain or very certain that they could eat healthy foods.

Quality of Life. DRCHC participants’ Overall Quality of Life score was fair to good. There were no significant differences on any of the Quality of Life Scales between males and females (Table 131).
Table 127. Follow-Up Eating Behavior Survey Instruments Internal Consistency Scores

<table>
<thead>
<tr>
<th>Psychographic Instruments</th>
<th>Possible Score Range</th>
<th># of Items</th>
<th>*Cronbach α</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief COPE: Problem Focused, Emotional Focused and Other Coping scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Coping</td>
<td>0-3</td>
<td>2</td>
<td>0.74</td>
</tr>
<tr>
<td>Planning</td>
<td>0-3</td>
<td>2</td>
<td>0.83</td>
</tr>
<tr>
<td>Positive Reframing Coping</td>
<td>0-3</td>
<td>2</td>
<td>0.82</td>
</tr>
<tr>
<td>Acceptance Coping</td>
<td>0-3</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Humor</td>
<td>0-3</td>
<td>2</td>
<td>0.85</td>
</tr>
<tr>
<td>Religion</td>
<td>0-3</td>
<td>2</td>
<td>0.86</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>0-3</td>
<td>2</td>
<td>0.82</td>
</tr>
<tr>
<td>Self-Distraction</td>
<td>0-3</td>
<td>2</td>
<td>0.62</td>
</tr>
<tr>
<td>Denial</td>
<td>0-3</td>
<td>2</td>
<td>0.76</td>
</tr>
<tr>
<td>Venting</td>
<td>0-3</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>0-3</td>
<td>2</td>
<td>0.93</td>
</tr>
<tr>
<td>Behavioral Disengagement</td>
<td>0-3</td>
<td>1</td>
<td>*</td>
</tr>
<tr>
<td>Self Blame</td>
<td>0-3</td>
<td>2</td>
<td>0.82</td>
</tr>
<tr>
<td><strong>Illness Behavior Questionnaire</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Hypochondria</td>
<td>0-1</td>
<td>9</td>
<td>0.58</td>
</tr>
<tr>
<td>Disease Conviction</td>
<td>0-1</td>
<td>6</td>
<td>0.57</td>
</tr>
<tr>
<td>Psychological vs. Somatic Perception of Illness</td>
<td>0-1</td>
<td>5</td>
<td>0.48</td>
</tr>
<tr>
<td>Affective Inhibition</td>
<td>0-1</td>
<td>5</td>
<td>0.82</td>
</tr>
<tr>
<td>Irritability</td>
<td>0-1</td>
<td>5</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Healthy Eating Self-Efficacy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-20</td>
<td>5</td>
<td>0.90</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of Life scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysphoria/Emotional</td>
<td>1-5</td>
<td>10</td>
<td>0.94</td>
</tr>
<tr>
<td>Interference with Activity of Physical Functioning</td>
<td>1-5</td>
<td>8</td>
<td>0.92</td>
</tr>
<tr>
<td>Food Avoidance</td>
<td>1-5</td>
<td>3</td>
<td>0.82</td>
</tr>
<tr>
<td>Body Image</td>
<td>1-5</td>
<td>2</td>
<td>0.74</td>
</tr>
<tr>
<td>Relationships/Social Interference</td>
<td>1-5</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>Health worry/future concerns</td>
<td>1-5</td>
<td>7</td>
<td>0.72</td>
</tr>
</tbody>
</table>

*See Appendix F for all items in each scale.
*Cronbach-α cannot be computed for 1-item scales.
<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All FEBS DRCHC Participants N=87</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td>Mean±SD</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
</tr>
<tr>
<td><strong>Brief COPE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Coping (0 to 3)</td>
<td>2.11±0.71 0.00-3.00</td>
<td>2.13±0.73 0.00-3.00</td>
<td>2.03±0.67 1.00-3.00</td>
</tr>
<tr>
<td>Planning (0 to 3)</td>
<td>2.22±0.69 0.00-3.00</td>
<td>2.20±0.69 0.00-3.00</td>
<td>2.32±0.71 0.50-3.00</td>
</tr>
<tr>
<td>Positive Reframing Coping (0 to 3)</td>
<td>1.82±0.80 0.00-3.00</td>
<td>1.86±0.80 0.00-3.00</td>
<td>1.65±0.81 0.00-3.00</td>
</tr>
<tr>
<td>Acceptance Coping (0 to 3)</td>
<td>2.28±0.86 0.00-3.00</td>
<td>2.27±0.83 0.00-3.00</td>
<td>2.29±0.99 0.00-3.00</td>
</tr>
<tr>
<td>Humor (0 to 3)</td>
<td>1.35±0.92 0.00-3.00</td>
<td>1.39±0.91 0.00-3.00</td>
<td>1.18±0.98 0.00-3.00</td>
</tr>
<tr>
<td>Religion (0 to 3)</td>
<td>1.01±1.05 0.00-3.00</td>
<td>1.00±1.08 0.00-3.00</td>
<td>1.03±0.96 0.00-3.00</td>
</tr>
<tr>
<td>Emotional Support (0 to 3)</td>
<td>1.91±0.95 0.00-3.00</td>
<td>1.98±0.78 0.00-3.00</td>
<td>1.62±0.94 0.00-3.00</td>
</tr>
<tr>
<td>Self-Distraction (0 to 3)</td>
<td>1.86±0.95 0.00-3.00</td>
<td>1.90±0.97 0.00-3.00</td>
<td>0.29±0.56 0.00-3.00</td>
</tr>
<tr>
<td>Denial (0 to 3)</td>
<td>0.33±0.56 0.00-3.00</td>
<td>0.34±0.57 0.00-3.00</td>
<td>0.59±1.12 0.00-2.00</td>
</tr>
<tr>
<td>Venting (0 to 3)</td>
<td>1.46±0.90 0.00-3.00</td>
<td>1.49±0.90 0.00-3.00</td>
<td>1.32±0.93 0.00-3.00</td>
</tr>
<tr>
<td>Substance Abuse (0 to 3)</td>
<td>0.34±0.73 0.00-3.00</td>
<td>0.35±0.72 0.00-3.00</td>
<td>0.35±0.81 0.00-3.00</td>
</tr>
<tr>
<td>Behavioral Disengagement (0 to 3)</td>
<td>0.54±0.79 0.00-3.00</td>
<td>0.57±0.77 0.00-3.00</td>
<td>0.41±0.87 0.00-3.00</td>
</tr>
<tr>
<td>Self Blame (0 to 3)</td>
<td>1.29±0.90 0.00-3.00</td>
<td>1.34±0.88 0.00-3.00</td>
<td>1.06±0.95 0.00-3.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

*Mann-Whitney U Tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
Table 129. Mean Abnormal Illness Behavior Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All FEBS DRCHC Participants N=87</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD  Range</td>
<td>Mean±SD  Range</td>
<td>Mean±SD  Range</td>
</tr>
<tr>
<td>Illness Behavior Questionnaire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Hypochondria (0 to 1)</td>
<td>0.39±0.22 0.00-0.89</td>
<td>0.41±0.21 #a 0.00-0.89</td>
<td>0.30±0.23 a 0.00-0.89</td>
</tr>
<tr>
<td>Disease Conviction (0 to 1)</td>
<td>0.49±0.27 0.00-1.00</td>
<td>0.51±0.24 0.00-1.00</td>
<td>0.41±0.24 0.17-1.00</td>
</tr>
<tr>
<td>Psychological vs Somatic Perception of Illness (0 to 1)</td>
<td>0.26±0.24 0.00-1.00</td>
<td>0.25±0.24 0.00-0.80</td>
<td>0.29±0.27 0.00-1.00</td>
</tr>
<tr>
<td>Affective Inhibition (0 to 1)</td>
<td>0.45±0.38 0.00-1.00</td>
<td>0.40±0.38 a 0.00-1.00</td>
<td>0.65±0.34 a 0.00-1.00</td>
</tr>
<tr>
<td>Irritability (0 to 1)</td>
<td>0.31±0.30 0.00-1.00</td>
<td>0.29±0.27 0.00-1.00</td>
<td>0.39±0.37 0.00-1.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

#Means followed by the same lowercase superscript in a row are significantly different using Mann Whitney Tests.
a p<0.05
Table 130. Mean Healthy Eating Self-Efficacy Scores of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>All FEBS DRCHC Participants N=87</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
<td>Mean±SD Range</td>
</tr>
<tr>
<td>Healthy Eating Self-Efficacy (4 to 20)</td>
<td>15.11±3.17 5.00-20.00</td>
<td>14.83±3.26 5.00-20.00</td>
<td>16.29±2.52 12.00-20.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

#Mann-Whitney U Tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
Table 131. Mean Quality of Life of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Characteristic (possible score range)†</th>
<th>All FEBS DRCHC Participants N=87</th>
<th>Female FEBS DRCHC Participants N=70</th>
<th>Male FEBS DRCHC Participants N=17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Life scales‡</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Quality of Life (1 to 5)</td>
<td>3.65±0.80 1.64-4.98</td>
<td>3.66±0.78 1.64-4.98</td>
<td>3.62±0.86 1.78-4.98</td>
</tr>
<tr>
<td>Dysphoria/Emotional (1 to 5)</td>
<td>3.71±0.90 1.00-5.00</td>
<td>3.72±0.87 1.60-5.00</td>
<td>3.68±1.03 1.00-5.00</td>
</tr>
<tr>
<td>Interference with Activity of Physical functioning (1 to 5)</td>
<td>3.78±0.94 1.00-5.00</td>
<td>3.85±0.94 1.00-5.00</td>
<td>3.46±0.93 1.75-5.00</td>
</tr>
<tr>
<td>Food Avoidance (1 to 5)</td>
<td>3.44±1.25 1.00-5.00</td>
<td>3.40±1.31 1.00-5.00</td>
<td>3.57±1.02 2.00-5.00</td>
</tr>
<tr>
<td>Body Image (1 to 5)</td>
<td>3.77±1.20 1.00-5.00</td>
<td>3.74±1.23 1.00-5.00</td>
<td>3.88±1.05 2.00-5.00</td>
</tr>
<tr>
<td>Relationships/Social Interference (1 to 5)</td>
<td>3.31±0.93 1.57-5.00</td>
<td>3.68±0.87 1.57-5.00</td>
<td>3.45±1.16 1.71-5.00</td>
</tr>
<tr>
<td>Health worry/future concerns (1 to 5)</td>
<td>3.57±1.03 1.00-5.00</td>
<td>3.55±1.03 1.00-5.00</td>
<td>3.65±1.03 1.40-5.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition; SD=Standard Deviation

†Higher scores indicate poorer quality of life.

‡Mann-Whitney U Tests indicated no significant differences in characteristics between female and male FEBS DRCHC participants.
Disturbed Eating Severity

FEBS DRCHC non-responders did not differ significantly from FEBS DRCHC responders on the Disturbed Eating Severity categories (Table 132). The majority were categorized as non-disturbed or mildly disturbed eaters (Table 133). Very few participants were categorized as highly disturbed eaters.

Non-parametric tests were conducted to answer Research Question 3: Does the presence and degree of disturbed eating behaviors in young adults with DRCHCs differ by gender, BMI, age of diagnosis, age of puberty, type of DRCHC, relationships with healthcare providers, barriers to following healthcare providers’ advice, access to health insurance, and other psychographic characteristics? Fishers Exact and non-parametric tests were used due to small sample sizes among Disturbed Eating Severity categories and incongruence with normality of scales.

Gender. There were no significant differences among Disturbed Eating Severity groups (non-disturbed, mildly disturbed, disturbed, and highly disturbed) and gender (see Table 133).

BMI. As Disturbed Eating Severity increased, EBS DRCHC participants’ BMIs increased significantly (Table 134).

Age of Diagnosis. A non-significant trend in the mean age of diagnosis and Disturbed Eating Severity of DRCHC FEBS participants was found (see Table 134). That is, highly
disturbed eaters were older when first diagnosed than participants categorized as non-disturbed eaters.

**Age of Puberty.** There were no significant differences among Disturbed Eating Severity category and age at start of puberty (see Table 134).

**Type of DRCHC.** The type of DRCHC (i.e., type 1 diabetes, celiac disease, cystic fibrosis, IBD, IBS) was not associated with Disturbed Eating Severity, except for IBS EBS participants (Table 135). That is, IBS participants were significantly more likely to be categorized as a “disturbed” eater than other Disturbed Eating Severity categories.
Table 132. Frequencies of Disturbed Eating Severity Categories of Follow-Up Eating Behavior Survey (FEBS) DRCHC* Responders and Non-Responders, Split by Gender

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Category#</th>
<th>FEBS DRCHC Responders</th>
<th>FEBS DRCHC Non-Responders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=87) N (%)</td>
<td>Female (N=70) N (%)</td>
</tr>
<tr>
<td>Non-Disturbed (ND)†</td>
<td>31 (36) 24 (34) 7 (41)</td>
<td>25 (33) 17 (30) 8 (38)</td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)‡</td>
<td>31 (36) 25 (36) 6 (35)</td>
<td>29 (38) 21 (38) 8 (38)</td>
</tr>
<tr>
<td>Disturbed (D)†</td>
<td>17 (20) 15 (21) 2 (12)</td>
<td>20 (26) 15 (27) 5 (24)</td>
</tr>
<tr>
<td>Highly-Disturbed (HD)‡</td>
<td>8 (9) 6 (9) 2 (12)</td>
<td>3 (4) 3 (5) 0 (0)</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition
#Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th>D<90th percentile, HD>90th percentile).
†Fisher’s Exact Tests indicate no significant differences between FEBS DRCHC responders and non-responders on Disturbed Eating Behavior Severity Category.
Table 133. Frequencies of Disturbed Eating Severity Categories of Eating Behavior Survey DRCHC* Participants, Split by Gender

<table>
<thead>
<tr>
<th>Disturbed Eating Severity Category#</th>
<th>EBS DRCHC Participants</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (N=166)</td>
<td>Female (N=128)</td>
<td>Male (N=38)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Non-Disturbed (ND)</td>
<td>49 (30)</td>
<td>37 (29)</td>
<td>12 (32)</td>
<td></td>
</tr>
<tr>
<td>Mildly-Disturbed (MD)</td>
<td>55 (33)</td>
<td>41 (32)</td>
<td>14 (37)</td>
<td></td>
</tr>
<tr>
<td>Disturbed (D)</td>
<td>38 (23)</td>
<td>29 (23)</td>
<td>9 (24)</td>
<td></td>
</tr>
<tr>
<td>Highly-Disturbed (HD)</td>
<td>24 (15)</td>
<td>21 (16)</td>
<td>3 (8)</td>
<td></td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Groups were categorized from cut-off values of Disturbed Eating Severity percentiles (ND=0 on Disturbed Eating Severity scale, MD<75th percentile, 75th ≥D<90th percentile, HD≥90th percentile).
Table 134. Mean Body Mass Index, Age of Diagnosis and Age of Puberty in Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=49)</th>
<th>MD* (N=55)</th>
<th>D* (N=38)</th>
<th>HD* (N=24)</th>
<th>p-value #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Body Mass Index (Wt[kg]/Ht[m²])</td>
<td>21.65±3.56</td>
<td>15.48-30.48</td>
<td>22.82±3.33</td>
<td>17.42-33.89</td>
<td>23.17±4.26</td>
</tr>
<tr>
<td>Age of Diagnosis ‡</td>
<td>15.19±6.66</td>
<td>&lt;1.00-25.00</td>
<td>14.29±5.98</td>
<td>&lt;1.00-21.00</td>
<td>14.59±5.18</td>
</tr>
<tr>
<td>Puberty Marker §</td>
<td>11.08±1.57</td>
<td>8.30-15.30</td>
<td>11.37±1.43</td>
<td>8.30-14.30</td>
<td>10.73±1.50</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
#Kruskal-Wallis H-Test
†NS=Non-Significant
‡Age of Diagnosis Categories are ND=31, MD=31, D=17, HD=8 for Follow-Up Eating Behavior Participants.
§Puberty marker for females, age of menarche onset (Tanner Stage 4) was subtracted by 1.70 years, while puberty marker for males, the age when voice changing began (Tanner Stage 3), was subtracted by 1.25 years.
Table 135. Frequencies of Types of DRCHCs* in Eating Behavior Survey DRCHC Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=49)</th>
<th></th>
<th>MD* (N=55)</th>
<th></th>
<th>D* (N=38)</th>
<th></th>
<th>HD* (N=24)</th>
<th></th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Diagnosis of a Diet-Related Chronic Health Condition by a Health Care Provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td>5</td>
<td>10.20</td>
<td>10</td>
<td>18.18</td>
<td>1</td>
<td>2.63</td>
<td>5</td>
<td>20.83</td>
<td>NS</td>
</tr>
<tr>
<td>Celiac Disease</td>
<td>11</td>
<td>22.45</td>
<td>11</td>
<td>20.00</td>
<td>9</td>
<td>23.68</td>
<td>5</td>
<td>20.83</td>
<td>NS</td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td>4</td>
<td>8.16</td>
<td>2</td>
<td>3.64</td>
<td>0</td>
<td>0.00</td>
<td>3</td>
<td>12.50</td>
<td>NS</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>8</td>
<td>16.33</td>
<td>13</td>
<td>23.64</td>
<td>3</td>
<td>7.89</td>
<td>2</td>
<td>8.33</td>
<td>NS</td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>24</td>
<td>48.98</td>
<td>24</td>
<td>43.63</td>
<td>30</td>
<td>78.95</td>
<td>14</td>
<td>58.33</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
*Kruskal-Wallis H-Test
†NS=Non-Significant
Relationships with Healthcare Providers and Barriers to Following Their Advice.  
There were no significant differences among FEBS DRCHC participants’ Disturbed Eating Severity groups and the relationship/communication and satisfaction with healthcare providers when first diagnosed and currently (Table 136). However, a non-significant trend showed highly disturbed eaters had higher scores than other Disturbed Eating Severity categories indicating poorer relationships/communications and satisfaction of healthcare treatment. In addition, the cost of specialized food was a significantly more frequently a barrier when first diagnosed to those with greater Disturbed Eating Severity (Table 137), however this was not a current hindrance. Currently, the cost of medicine as a barrier was significantly greater in those with higher levels of Disturbed Eating Severity (see Table 137).

To examine whether relationship/communication and satisfaction with treatment from healthcare providers, along with cost of medicine and specialized food changed over time, Wilcoxon Signed-Rank Tests were conducted among Disturbed Eating Severity groups. The only significant changes found over time were relationship/communications and satisfaction with treatment from healthcare providers in mildly disturbed eaters. That is, mildly disturbed eaters believed they had better relationship/communications and satisfaction with their treatment from healthcare providers now than when first diagnosed.

Health Insurance. EBS DRCHC participants categorized as highly disturbed eaters were significantly less likely to have health insurance when growing up, as well as currently compared with less disturbed eaters (Table 138).
Coping Mechanisms. The Brief COPE explored coping mechanisms participants used when faced with a difficult situation. Only two coping mechanisms differed significantly among Disturbed Eating Severity categories and these were Behavioral Disengagement (i.e., giving up when experiencing a problem) and Self Blame (e.g., I blame myself for things that happened). That is, highly disturbed FEBS DRCHC participants were significantly more likely to just give up when experiencing a problem and criticize themselves compared to less disturbed eaters (Table 139).

Abnormal Illness Behaviors. Highly disturbed FEBS DRCHC participants were significantly more likely to have higher General Hypochondria (i.e., afraid of illness), Psychological vs. Somatic Perception of Illness (e.g., Do you ever think of your illness as punishment of something you have done wrong in the past?), and Disease Conviction (i.e., belief that a somatic disorder [e.g., hypochondria] is present) scores compared with less disturbed eaters (Table 140). There were no significant differences in Affective Inhibition and Irritability abnormal illness scores among Disturbed Eating Severity categories.
Table 136. Mean Scores for Type of Care Received from Healthcare Providers When First Diagnosed and Currently in Follow-Up Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=27)</th>
<th>MD* (N=29)</th>
<th>D* (N=17)</th>
<th>HD* (N=8)</th>
<th>p-value^#</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFTER DIAGNOSIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship with Healthcare Team^1</td>
<td>2.36±0.95†</td>
<td>2.52±1.06^A</td>
<td>2.25±0.93§</td>
<td>2.75±0.89</td>
<td>NS†</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Communication with Healthcare Team^1</td>
<td>2.40±0.96†</td>
<td>2.52±1.06</td>
<td>2.31±0.87§</td>
<td>2.75±1.04</td>
<td>NS</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with Treatment^2 (1 to 5)</td>
<td>3.00±1.27</td>
<td>3.07±1.25^B</td>
<td>2.94±1.20</td>
<td>2.88±1.25</td>
<td>NS</td>
</tr>
<tr>
<td>CURRENTLY¶</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship with Healthcare Team^1</td>
<td>2.14±0.89^k</td>
<td>2.04±1.00^kA</td>
<td>2.27±1.03</td>
<td>2.50±0.76</td>
<td>NS†</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Communication with Healthcare Team^1</td>
<td>2.11±0.79^k</td>
<td>2.14±0.93^k</td>
<td>2.36±1.01^g</td>
<td>2.50±0.76</td>
<td>NS</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with Treatment^2 (1 to 5)</td>
<td>2.72±1.07</td>
<td>2.48±1.06^B</td>
<td>2.93±1.27</td>
<td>2.63±1.06</td>
<td>NS</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
^Kruskal-Wallis H-Test
†NS=Non-Significant
^Uppercase letters followed by the same superscript in a column are significantly different (p<0.05) using Wilcoxon Signed-Rank Tests.
¶N=29 for ND participants Current Relationship and Communication with Healthcare Team; and Satisfaction with Treatment.
†N=25 because 2 participants were unsure; †N=16 because 1 participant was unsure; ^N=28 because 1 participants were unsure; ^N=14 because 1 participant was unsure.
^Likert Scale (1=Very Good, 2=Good, 3=Okay, 4=Bad, 5=Very Bad)
^²Likert Scale (1=Very Satisfied, 2=Satisfied, 3=Neither Satisfied nor Dissatisfied, 4=Dissatisfied, 5=Very Dissatisfied)
Table 137. Mean Scores of Barriers to Following Healthcare Providers Advice When First Diagnosed and Currently in Follow-Up Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>ND* (N=29)</th>
<th>MD* (N=30)</th>
<th>D* (N=17)</th>
<th>HD* (N=8)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>AFTER DIAGNOSIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of Medicine Barrier (1 to 5)</td>
<td>4.59±0.73</td>
<td>2.00-5.00</td>
<td>4.57±0.86</td>
<td>2.00-5.00</td>
<td>4.53±0.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of Specialized Food Barrier</td>
<td>4.69±0.71</td>
<td>2.00-5.00</td>
<td>4.53±0.86</td>
<td>2.00-5.00</td>
<td>4.44±0.89</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CURRENTLY‡</td>
<td>4.72±0.59</td>
<td>3.00-5.00</td>
<td>4.31±1.20</td>
<td>1.00-5.00</td>
<td>4.08±1.32</td>
</tr>
<tr>
<td>Cost of Medicine Barrier (1 to 5)</td>
<td>4.54±0.78</td>
<td>2.00-5.00</td>
<td>4.46±0.86</td>
<td>2.00-5.00</td>
<td>3.80±1.42</td>
</tr>
<tr>
<td>(1 to 5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
*Kruskal-Wallis H-Test
†NS=Non-Significant
‡N=28 for ND; N=29 for MD; N=17 for D; N=8 for HD for participants’ Current Medicine and Specialized Food Barriers
§N=16 because 1 participants was unsure.
¶N=24 because 2 participants were unsure.
¥N=7 because 1 participant was unsure.
*Likert Scale (1=All of the time, 2=Often, 3=Sometime, 4=Seldom, 5=Never)
Table 138. Frequencies of Eating Behavior Survey DRCHC* Participants’ Health Insurance Status, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=49)</th>
<th></th>
<th>MD* (N=55)</th>
<th></th>
<th>D* (N=38)</th>
<th></th>
<th>HD* (N=24)</th>
<th></th>
<th>p-value#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Health Insurance Growing Up</td>
<td>45</td>
<td>91.84</td>
<td>53</td>
<td>96.36</td>
<td>36</td>
<td>94.74</td>
<td>15</td>
<td>62.50</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Current Health Insurance</td>
<td>46</td>
<td>93.88</td>
<td>53</td>
<td>93.36</td>
<td>38</td>
<td>100.00</td>
<td>19</td>
<td>79.17</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.

#Kruskal-Wallis H-Test.
Table 139. Mean Problem Focused, Emotional Focused and Other Coping Scores of Follow-Up Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=31)</th>
<th>MD* (N=31)</th>
<th>D* (N=17)</th>
<th>HD* (N=8)</th>
<th>p-value#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Brief COPE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Coping (0 to 3)</td>
<td>2.02±0.84</td>
<td>0.00-3.00</td>
<td>2.11±0.69</td>
<td>1.00-3.00</td>
<td>2.12±0.52</td>
</tr>
<tr>
<td>Planning (0 to 3)</td>
<td>2.19±0.81</td>
<td>0.00-3.00</td>
<td>2.31±0.57</td>
<td>1.00-3.00</td>
<td>2.21±0.61</td>
</tr>
<tr>
<td>Positive Reframing Coping (0 to 3)</td>
<td>1.92±0.71</td>
<td>1.00-3.00</td>
<td>1.76±0.89</td>
<td>0.00-3.00</td>
<td>1.74±0.90</td>
</tr>
<tr>
<td>Acceptance Coping (0 to 3)</td>
<td>1.90±0.87</td>
<td>0.00-3.00</td>
<td>2.29±0.74</td>
<td>1.00-3.00</td>
<td>1.94±1.03</td>
</tr>
<tr>
<td>Humor (0 to 3)</td>
<td>1.34±0.91</td>
<td>0.00-3.00</td>
<td>1.35±0.94</td>
<td>0.00-3.00</td>
<td>1.18±0.79</td>
</tr>
<tr>
<td>Religion (0 to 3)</td>
<td>1.00±1.05</td>
<td>0.00-3.00</td>
<td>0.79±0.88</td>
<td>0.00-3.00</td>
<td>1.18±1.16</td>
</tr>
<tr>
<td>Emotional Support (0 to 3)</td>
<td>1.92±0.91</td>
<td>0.00-3.00</td>
<td>1.98±0.74</td>
<td>1.00-3.00</td>
<td>1.82±0.83</td>
</tr>
<tr>
<td>Self-Distraction (0 to 3)</td>
<td>1.97±0.87</td>
<td>0.00-3.00</td>
<td>1.81±0.95</td>
<td>0.00-3.00</td>
<td>1.76±0.97</td>
</tr>
<tr>
<td>Denial (0 to 3)</td>
<td>0.40±0.58</td>
<td>0.00-2.00</td>
<td>0.18±0.33</td>
<td>0.00-1.00</td>
<td>0.18±0.30</td>
</tr>
<tr>
<td>Venting (0 to 3)</td>
<td>1.52±0.77</td>
<td>0.00-3.00</td>
<td>1.32±0.94</td>
<td>0.00-3.00</td>
<td>1.53±0.87</td>
</tr>
<tr>
<td>Substance Abuse (0 to 3)</td>
<td>0.34±0.61</td>
<td>0.00-2.00</td>
<td>0.44±0.85</td>
<td>0.00-3.00</td>
<td>0.03±0.12</td>
</tr>
<tr>
<td>Behavioral Disengagement (0 to 3)</td>
<td>0.45±0.81</td>
<td>0.00-3.00</td>
<td>0.35±0.61</td>
<td>0.00-2.00</td>
<td>0.76±0.83</td>
</tr>
<tr>
<td>Self Blame (0 to 3)</td>
<td>0.98±0.83</td>
<td>0.00-3.00</td>
<td>1.44±0.85</td>
<td>0.00-3.00</td>
<td>1.24±0.95</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
#Kruskal-Wallis H-Test
†NS=Non-Significant
Table 140. Mean Abnormal Illness Behavior Scores of Follow-Up Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=31)</th>
<th>MD* (N=31)</th>
<th>D* (N=17)</th>
<th>HD* (N=8)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td><strong>Abnormal Illness scales</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Hypochondria (0 to 1)</td>
<td>0.35±0.21</td>
<td>0.00-0.78</td>
<td>0.33±0.21</td>
<td>0.00-0.78</td>
<td>0.47±0.21</td>
</tr>
<tr>
<td>Disease Conviction (0 to 1)</td>
<td>0.46±0.26</td>
<td>0.17-1.00</td>
<td>0.43±0.20</td>
<td>0.00-0.83</td>
<td>0.56±0.29</td>
</tr>
<tr>
<td>Psychological vs Somatic Perception of Illness (0 to 1)</td>
<td>0.27±0.20</td>
<td>0.00-0.60</td>
<td>0.16±0.20</td>
<td>0.00-0.60</td>
<td>0.31±0.26</td>
</tr>
<tr>
<td>Affective Inhibition (0 to 1)</td>
<td>0.46±0.41</td>
<td>0.00-1.00</td>
<td>0.43±0.40</td>
<td>0.00-1.00</td>
<td>0.51±0.36</td>
</tr>
<tr>
<td>Irritability (0 to 1)</td>
<td>0.25±0.29</td>
<td>0.00-1.00</td>
<td>0.28±0.24</td>
<td>0.00-1.00</td>
<td>0.38±0.39</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.

#Kruskal-Wallis H-Test

†NS=Non-Significant
Healthy Eating Self-Efficacy. There were no significant differences among Disturbed Eating Severity categories and Healthy Eating Self-Efficacy scores (Table 141). Thus, FEBS DRCHC participants’ confidence in their ability to eat healthy foods was not associated with the level of Disturbed Eating Severity.

Quality of Life. Overall Quality of Life mean scores were associated with Disturbed Eating Severity in FEBS DRCHC participants (see Table 142). That is, Quality of Life decreased significantly as Disturbed Eating Severity increased. Further examination of Quality of Life scales revealed that only Body Image and Food Avoidance scales were significantly associated with Disturbed Eating Severity. Thus, as Disturbed Eating Severity increased, there was a significant decrease in body satisfaction and increase in food avoidance.

A summary of significant differences among Disturbed Eating Severity for EBS (where applicable) and FEBS DRCHC participants’ demographic and psychographic characteristics are found in Tables 142 and 143.
Table 141. Mean Quality of Life Scores and Healthy Eating Self-Efficacy of Follow-Up Eating Behavior Survey DRCHC* Participants, Split by Disturbed Eating Severity

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ND* (N=31)</th>
<th>MD* (N=31)</th>
<th>D* (N=17)</th>
<th>HD* (N=8)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(possible score range)</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
<td>Range</td>
<td>Mean±SD</td>
</tr>
<tr>
<td>Quality of Life scales:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Quality of Life (1 to 5)*</td>
<td>3.71±0.76</td>
<td>1.91-4.98</td>
<td>3.84±0.63</td>
<td>2.37-4.98</td>
<td>3.63±0.85</td>
</tr>
<tr>
<td>Dysphoria/Emotional (1 to 5)</td>
<td>3.68±0.87</td>
<td>1.70-5.00</td>
<td>3.93±0.71</td>
<td>2.40-5.00</td>
<td>3.76±0.93</td>
</tr>
<tr>
<td>Interference with Activity of Physical functioning (1 to 5)</td>
<td>3.68±1.01</td>
<td>1.00-5.00</td>
<td>4.02±0.69</td>
<td>2.63-5.00</td>
<td>3.63±0.99</td>
</tr>
<tr>
<td>Food Avoidance (1 to 5)</td>
<td>3.38±1.21</td>
<td>1.33-5.00</td>
<td>3.83±1.11</td>
<td>1.67-5.00</td>
<td>3.31±1.29</td>
</tr>
<tr>
<td>Body Image (1 to 5)</td>
<td>4.08±1.03</td>
<td>2.00-5.00</td>
<td>4.02±1.11</td>
<td>1.00-5.00</td>
<td>3.41±1.23</td>
</tr>
<tr>
<td>Relationships/Social Interference (1 to 5)</td>
<td>3.71±0.90</td>
<td>2.00-5.00</td>
<td>3.75±0.90</td>
<td>1.86-5.00</td>
<td>3.63±0.99</td>
</tr>
<tr>
<td>Health worry/future concerns (1 to 5)</td>
<td>3.71±0.99</td>
<td>1.00-5.00</td>
<td>3.48±0.95</td>
<td>1.40-5.00</td>
<td>3.78±1.08</td>
</tr>
<tr>
<td>Healthy Eating Self-Efficacy (4 to 20)</td>
<td>15.55±3.02</td>
<td>10.00-20.00</td>
<td>14.74±3.53</td>
<td>5.00-20.00</td>
<td>15.65±3.00</td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, ND=Non-Disturbed, MD=Mildly-Disturbed, D=Disturbed, HD=Highly-Disturbed, SD=Standard Deviation.
*Kruskal-Wallis H-Test
**NS=Non-Significant
†Higher scores indicate greater satisfaction with quality of life
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Significantly Different</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis of a Diet-Related Chronic Health Condition by a Health Care Provider</strong></td>
<td></td>
</tr>
<tr>
<td>Type 1 Diabetes</td>
<td></td>
</tr>
<tr>
<td>Celiac Disease</td>
<td></td>
</tr>
<tr>
<td>Cystic Fibrosis</td>
<td></td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td></td>
</tr>
<tr>
<td>Irritable Bowel Syndrome</td>
<td>X</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Body Mass Index (Wt[kg]/Ht[m2])</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Age of Diagnosis</strong>†</td>
<td></td>
</tr>
<tr>
<td><strong>Puberty Marker</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Health Insurance Growing Up</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>Current Health Insurance</strong></td>
<td>X</td>
</tr>
<tr>
<td><strong>AFTER DIAGNOSIS</strong>†</td>
<td></td>
</tr>
<tr>
<td>Relationship with Healthcare Team</td>
<td></td>
</tr>
<tr>
<td>Communication with Healthcare Team</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with Treatment</td>
<td></td>
</tr>
<tr>
<td>Cost of Medicine Barrier</td>
<td></td>
</tr>
<tr>
<td>Cost of Specialized Food Barrier</td>
<td>X</td>
</tr>
<tr>
<td><strong>CURRENTLY</strong>†</td>
<td></td>
</tr>
<tr>
<td>Relationship with Healthcare Team</td>
<td></td>
</tr>
<tr>
<td>Communication with Healthcare Team</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with Treatment</td>
<td></td>
</tr>
<tr>
<td>Cost of Medicine Barrier</td>
<td>X</td>
</tr>
<tr>
<td>Cost of Specialized Food Barrier</td>
<td></td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Cells marked with a letter “X” indicate a significant difference among disturbed eating severity categories (i.e., non-disturbed, mildly disturbed, disturbed, highly disturbed) using Kruskal-Wallis H-Test. All characteristics were assessed on the Eating Behavior Survey (EBS) except those marked with a † which were assessed on the Follow-up Eating Behavior Survey (FEBS).
Table 143. Summary of Significant Differences Among Disturbed Eating Severity Categories for DRCHC* Participants’ Psychographic Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Significantly Different#</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief COPE†</strong></td>
<td></td>
</tr>
<tr>
<td>Active Coping</td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td></td>
</tr>
<tr>
<td>Positive Reframing Coping</td>
<td></td>
</tr>
<tr>
<td>Acceptance Coping</td>
<td></td>
</tr>
<tr>
<td>Humor</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Emotional Support</td>
<td></td>
</tr>
<tr>
<td>Self-Distraction</td>
<td></td>
</tr>
<tr>
<td>Denial</td>
<td></td>
</tr>
<tr>
<td>Venting</td>
<td></td>
</tr>
<tr>
<td>Substance Abuse</td>
<td></td>
</tr>
<tr>
<td>Behavioral Disengagement</td>
<td>X</td>
</tr>
<tr>
<td>Self Blame</td>
<td>X</td>
</tr>
<tr>
<td><strong>Abnormal Illness scales†</strong></td>
<td></td>
</tr>
<tr>
<td>General Hypochondria</td>
<td>X</td>
</tr>
<tr>
<td>Disease Conviction</td>
<td>X</td>
</tr>
<tr>
<td>Psychological vs Somatic Perception of Illness</td>
<td>X</td>
</tr>
<tr>
<td>Affective Inhibition</td>
<td></td>
</tr>
<tr>
<td>Irritability</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of Life scales†</strong></td>
<td></td>
</tr>
<tr>
<td>Overall Quality of Life</td>
<td>X</td>
</tr>
<tr>
<td>Dysphoria/Emotional</td>
<td></td>
</tr>
<tr>
<td>Interference with Activity of Physical Functioning</td>
<td></td>
</tr>
<tr>
<td>Food Avoidance</td>
<td>X</td>
</tr>
<tr>
<td>Body Image</td>
<td>X</td>
</tr>
<tr>
<td>Relationships/Social Interference</td>
<td></td>
</tr>
<tr>
<td>Health worry/future concerns</td>
<td></td>
</tr>
<tr>
<td><strong>Healthy Eating Self-Efficacy†</strong></td>
<td></td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition

#Cells marked with a letter “X” indicate a significant difference among disturbed eating severity categories (i.e., non-disturbed, mildly disturbed, disturbed, highly disturbed) using Kruskal-Wallis H-Test. All characteristics were assessed on the Eating Behavior Survey (EBS) except those marked with a † which were assessed on the Follow-up Eating Behavior Survey (FEBS).
Chapter 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

In this chapter, the three research questions are discussed followed by limitations and conclusions of this study. The chapter closes with recommendations for future research.

This study’s goal was to comprehensively examine the demographic and psychographic characteristics that are reported to be linked to disturbed eating behaviors in healthy young adults and those with selected diet-related chronic health conditions (DRCHCs; i.e., type 1 diabetes mellitus, celiac disease, cystic fibrosis, irritable bowel syndrome and inflammatory bowel diseases). The survey data collected from this large, diverse sample of young adults (ages 18 to 26 years) was used to describe 1) demographic and psychographic characteristics associated with the presence of disturbed eating behaviors in young adults; 2) how young adults with DRCHCs differed from those without DRCHCs with regard to demographic and psychographic characteristics and presence and degree of disturbed eating behaviors; and 3) how the presence and degree of disturbed eating behaviors in young adults with DRCHCs differed by gender, body mass index (BMI), age of diagnosis, age of puberty, type of DRHC, relationships with healthcare providers, barriers to following healthcare providers’ advice, and access to health insurance.

EATING BEHAVIOR SURVEY RESULTS

Demographic Characteristics

The 2625 participants in this study were mostly females who were enrolled in their first two years of college. This racially diverse sample had four times more Asian
and three times more Mixed/Multicultural participants than the national average for adults\textsuperscript{284}. These higher rates are likely because more young adults in the United States are willing to report their mixed race heritage and categorize themselves as multi-racial\textsuperscript{285} compared to older adults and because no comparable national data are available specifically for young adults (ages 18-26). However, the racial/ethnic breakdown was similar to the Rutgers University student population\textsuperscript{286}, where most participants were enrolled.

Participants’ mean BMI was in the healthy range. The proportion who were overweight or obese was similar to national data (i.e., 24\% overweight or obese)\textsuperscript{287}. Participants’ self-ratings of current health status were similar to 2007 U.S. data for persons 18 years or older\textsuperscript{288}. However, the percent rating their health as being either poor or fair was three times higher than national data for the 18 to 24 year old subgroup (i.e., 10\% vs. 3.3\%)\textsuperscript{288}. Healthy and DRCHC participants reported 1.5 and 2 times, respectively, more mentally and physically unhealthy days than the national average\textsuperscript{289}. Estimates of mentally and physically unhealthy days may be higher because college tends to be a stressful time period for young adults and the comparable national data included both college and non-college students\textsuperscript{290-292}. Given the serious nature of the DRCHCs in this study, it is not surprising that individuals with DRCHCs had a significantly greater number of mentally and physically unhealthy days than healthy participants.

The proportion of study participants who had been diagnosed with an eating disorder (2.3\%) exceeded the estimated prevalence of eating disorders in young adults (0.3 to 1.0\% prevalence)\textsuperscript{293,294}, perhaps indicating that estimates are too low, those with eating disorders are drawn to surveys on “eating practices” (see Appendix B), or that
eating disorders are more common among those experiencing the pressures associated with the pursuit of higher education. However, the ratio of females to males who had been diagnosed by a healthcare professional with an eating disorder was similar to epidemiological study findings that eating disorders are more prevalent in females\textsuperscript{275, 293}.

The proportion of participants who had no health insurance when growing up is similar to current national averages\textsuperscript{288}. However, the percent who were currently without health insurance was almost 3 times lower than U.S. national rates for 18 to 24 year olds most likely because college students in this age group can remain on their parents health insurance\textsuperscript{288}.

**Eating Behaviors**

As in other studies, Eating Disorder Examination Questionnaire (EDE-Q) Restraint scale scores were higher for women than males\textsuperscript{295}. Total Restraint scores were similar to previously reported normative data for both males (0.97±1.27SD vs. 1.04±1.19SD) and females (1.35±1.44SD vs. 1.62±1.54SD)\textsuperscript{264, 265}. Mean Restraint scores likely were similar to normative data because the percent of participants who reported dieting (42% women and 29% men) was comparable to typically reported dieting rates for women (39%) and men (21%)\textsuperscript{296, 297}. As in other studies, this study found that restrained eating was higher in participants categorized as overweight and obese than in those who were at a normal weight range\textsuperscript{298, 299}.

Eating, Weight, and Shape concerns for study participants were comparable to previously reported normative data\textsuperscript{264, 265}. In addition, as found in previous studies, males scored lower on these scales than females\textsuperscript{265}. 
Inappropriate compensatory behaviors (i.e. excessive exercise, self-induced vomiting, and medicine misuse) were used by a third of the study sample. Excessive exercise was used significantly more often by males than females. Lavender et al. suggest that the higher rates of excessive exercise in men may be interpreted as illustrating the dual nature of the male body ideal: low body fat and high muscularity\textsuperscript{265}. Thus, excessive exercise may not be considered a compensatory behavior for males, but rather a muscle-gaining behavior\textsuperscript{300}. The rate of regular occurrences of self-induced vomiting behaviors used by males in the sample was comparable to other normative data for men, whereas medicine misuse was three times higher (3.45% vs. 0.25%)\textsuperscript{265}. Differences in this sample of male participants may be because men’s normative data only assessed misuse of laxatives and not other forms of medicine for use of weight control (e.g., insulin). Previous research has shown higher rates of self-induced vomiting and medicine misuse in young adult females compared to males\textsuperscript{264,301}; surprisingly, this was not the case in this study. The normative data from Luce et al. included a group of women who were not as diverse (i.e., 88% White, 0.7% Asian) as those in this study (i.e., 58% White and 20% Asian) and recent research has reported a lower incidence of weight control behaviors (e.g., dieting) in certain ethnic groups, particularly Asian women\textsuperscript{302,303}. In this study, non-White female participants reported dieting significantly less (p<0.001) than White female participants, but inappropriate compensatory behaviors did not differ.

Binge eating rates were comparable to previously reported normative data for men and women\textsuperscript{264,265}. However, regular occurrences (i.e., >4 binge eating episodes over the past 28 days) of binge eating were two times higher in women compared with previously reported normative data from a less diverse sample\textsuperscript{264}. 
Emotional Eating, Disinhibited Eating, and Regulation of Emotion scores were similar to previous studies\textsuperscript{171,236,304}. Females had significantly higher Emotional Eating scores and lower Emotional Regulation scores than men, perhaps because men tend to respond differently to stress and various emotional states and/or are better equipped to cope with stressful situations\textsuperscript{305,306}. For instance, previous research reported that women seek emotion-oriented coping strategies while men seek problem-focused coping strategies (i.e., task-oriented coping) when in a stressful situation\textsuperscript{307}. Consistent with this, the results reported here found that female participants had significantly higher scores on negative coping methods (i.e., Emotion-Oriented and Avoidant Coping) than males.

Sex-role orientation (i.e., feminine vs. masculine) rather than biological sex also may play a role in the types of coping strategies individuals choose\textsuperscript{308}. For example, Nezu et al. found high masculine participants of both sexes engage in less avoidance coping than low masculine participants\textsuperscript{308}. Although masculinity was not assessed, the male participants in this study may have higher masculinity, which could account for the finding that men had significantly lower mean Avoidant Coping scores than females.

As in other research, females in this study also were more likely to diet (i.e., restrained eating) whereas males were more likely to exercise to control their weight\textsuperscript{296,297,300}. Restrained eating may set up female dieters for failure (i.e., disinhibited eating), especially among individuals who adopt a strict dietary regimen that is difficult to follow.

These results may support the Restraint Theory which suggests that attempts to maintain one’s eating below the level necessary for satiety may cause a state of physiological deprivation that predisposes counter-regulatory eating (i.e., disinhibition or “uncontrolled eating”) in a variety of circumstances (i.e., emotional states)\textsuperscript{309,310}. That is,
Emotional and Disinhibited Eating mean scale scores in this study were significantly correlated with Restraint scale scores, as was found to be true in other studies.\textsuperscript{171}

Night eating is more common in young adults (18-30 years old) than other age groups.\textsuperscript{311} The high rate of occurrence in this age group may be related to psychological distress which is reflected in the higher than usual rates of mentally unhealthy days reported by the young adults in this study. Two percent of the study participants met the rigorous criteria used in this study to identify those with night eating syndrome. Liberal diagnostic criteria have been used in previous studies to identify night eating syndrome, such as evening hyperphagia (range 25 to 50\% of daily caloric intake after dinner)\textsuperscript{311}, which inflates prevalence rates. The prevalence rates reported for the general population\textsuperscript{313}, using rigorous definitions of night eating, are similar to those obtained in this study.\textsuperscript{311} As in previous studies\textsuperscript{312, 314}, night eating was significantly correlated with binge eating and inappropriate compensatory behaviors (i.e., medicine misuse and self-induced vomiting).

In summary, the eating behavior data collected in this study indicate that participants’ restraint eating; eating, weight, and shape concerns; and emotional, disinhibited, and night eating were similar to data reported previously\textsuperscript{171, 264, 265, 304, 313}. However, females’ lower rate of regular excessive exercise as a compensatory behavior and higher rate of regular binge eating and males’ higher rate of regular medicine misuse differed from rates reported by others\textsuperscript{264, 265}. This study adds to the literature by providing a comprehensive description of disturbed eating behaviors in a racially/ethnically diverse young adult sample. In addition, the shortened scales (i.e., Emotional Eating, Disinhibited Eating, and Night Eating) used in this study were found
to have good reliability, comparable to their original full length scales, which can help future researchers measure these attributes with lower participant burden in young adults.

**Body Image Attributes**

Sociocultural influences are hypothesized to promote disturbances of body image and eating. This study found that females’ mean scores on sociocultural influencers (i.e., Self-Evaluative Salience, Motivational Salience, Sociocultural Attitudes Towards Appearance) were higher than males, thereby supporting previous studies. In general, female participants were significantly more likely to base their self-worth and value on their physical appearance, along with cognitively buying into societal norms for body size and appearance, than males.

Body image intense media was another sociocultural influencer examined. Compared with females, male participants were far less likely to be affected by body image intense media (i.e., television, magazines, websites), with few reporting these types of media were their favorites. Previous research has indicated that men are less exposed to societal pressures to live up to a certain body type that would initiate the perceived need to diet. This study’s findings suggest that males do not choose to use this type of media. In addition, magazines targeted to young males have one-tenth as many advertisements promoting dieting as magazines frequently read by females.

Negative sociocultural influencers may affect weight perceptions and cause body image distortion. Baseline perceived weight status results from a 20-year longitudinal study that began in young adulthood were comparable to men’s perceived current weight status in this study, whereas more females in this study perceived their current weight status as being thinner to average than women in the longitudinal study. Increased
feelings of cultural pressures to be thin typically reported by females\textsuperscript{207} may explain why females in this study had significantly higher Body Image Distortion (i.e., perceived their weight to be heavier than actual weight) mean scores than males.

Weight teasing history of female participants was similar to longitudinal data with regards to the percent of children who were weight teased (45\% vs. 45\%), however males in this study reported higher rates of weight teasing than those in the longitudinal study (32\% vs. 46\%)\textsuperscript{318, 319}. Consistent with other research, females in this study felt more psychological distress after being weight teased than males\textsuperscript{320}.

In summary, body image attributes findings indicate that study participants’ sociocultural influencers (i.e., Self-Evaluative Salience, Motivational Salience, Sociocultural Attitudes Towards Appearance), weight perceptions, body image distortion, weight teasing history, and use of body image intense media were similar to data reported previously\textsuperscript{188, 207, 209, 210, 315-318, 320}. This study expands our understanding of body image attributes to a more diverse group of young adults and indicates that young adult males’ use of body image intense media is limited. In addition, the shortened scales (i.e., Self-Evaluative Salience, Motivational Salience, Sociocultural Attitudes Towards Appearance, Perception of Teasing Scale) used in this study were found to have good reliability, comparable to their original full length scales, which can help future researchers measure these attributes with lower participant burden.

**Psychological Characteristics**

Depression scale scores suggested that approximately one-fifth of participants had moderate levels of depression which is similar to results reported for other university students\textsuperscript{321}. The significantly higher depression scores of DRCHC participants (28\%
with moderate levels of depression) were reflective of reports from previous studies that these individuals tend to be more depressed than their healthy counterparts\textsuperscript{146, 151}. However, mean scores were indicative of mostly mild depression severity.

Anxiety scores were similar to previously reported data in a representative group of university students\textsuperscript{321}. Approximately 20 percent of all participants and 29 percent of DRC\textsuperscript{HC} participants had scores suggestive of moderate levels of mild anxiety severity.

Obsessive Compulsive Disorder (OCD) scores of participants who reported one or more OCD type behavior were comparable to other studies with young adults\textsuperscript{322, 323}. DRC\textsuperscript{HC} participants reported more OCD type behaviors than healthy peers (56\% vs. 43\%), along with higher OCD mean scores. However, these scores indicate mild OCD severity.

In summary, the psychological characteristics of study participants indicate anxiety, depression, and OCD severity similar to data reported previously\textsuperscript{321, 322}. A comparison by race (i.e., White vs. non-White) revealed no significant differences in depression and anxiety scores as reported by others\textsuperscript{153, 324}. This study expands the literature by describing depression, anxiety, and OCD scores in a diverse young adult population with and without a DRC\textsuperscript{HC}.

**Intrapersonal Characteristics**

Self-Esteem scores were comparable to other studies of college students\textsuperscript{325}. Men had significantly higher levels of self-esteem than women, thereby supporting research reporting gender-specific self-esteem differences\textsuperscript{326}. Boys have been found to have higher levels of self-esteem and experience increased levels of self-esteem over time,
whereas girls have various trajectories and may experience an increase or decrease in self-esteem during their teenage years\textsuperscript{327}.

Health Value scores were comparable to other studies of young adults, with females scoring significantly higher than males\textsuperscript{328}. Additionally, this study supports previous research indicating that females place a greater emphasis on their overall health than males, perhaps because females are socialized to hold different health beliefs (e.g., perceived vulnerability and intention to perform preventive health behaviors)\textsuperscript{328}.

Dichotomous Thinking has been investigated previously only with female adults diagnosed with an eating disorder and non-eating disordered overweight/obese women\textsuperscript{158}. As expected, mean Dichotomous Thinking scores of study participants were lower than those reported for females with an eating disorder. However, scores for those in this study who had been diagnosed with an eating disorder were similar to previously reported data\textsuperscript{158}. As anticipated, males had lower dichotomous thinking attitudes towards food than females.

In summary, the intrapersonal characteristic data indicate that participants’ self-esteem, health value, stress and coping mechanisms (see Emotional Eating, Disinhibited Eating, and Emotional Regulation above), were consistent with the literature\textsuperscript{158, 325, 328, 329}. Additionally, this study is the first time young adults who are men, are non-eating disordered, are at a normal weight, and/or have a DRCHC have been assessed using the Dichotomous Thinking scale. The shortened scales (i.e., Rosenberg Self-Esteem, Coping Inventory in Stressful Situations-21, and Dichotomous Thinking) used in this study were found to have good internal reliability, which can help future researchers measure these attributes with lower participant burden.
Family and Social Environment Characteristics

Mealtime Communication-Based Stress, Mealtime Structure, Appearance Weight Control, and Emphasis on Mother’s Weight scores were comparable to those reported for undergraduate females. Although published research using these scales with males could not be located, this study’s findings suggest that both males and females recollect childhood mealtime experiences as being somewhat stressful, with females feeling greater stress than males. This study expands the literature by reporting comparison data for men as well as data for a more racially/ethnically diverse audience of young adults. In addition, the shortened scales used in this study were found to have good reliability, which can aid future research and lower participant burden.

Disturbed Eating Severity

The Disturbed Eating Severity Scale was created for this study to describe the extent to which participants’ exhibited disturbed eating behaviors. This novel scale incorporates nine instruments with good reliability measuring key attributes associated with disordered eating. These attributes are: Eating (5 items), Weight (5 items) and Shape Concerns (8 items), Dietary Restraint (5 items), Inappropriate Compensatory Behaviors (3 items), Binge Eating (1 item), Emotional (3 items) and Disinhibited Eating (3 items), and Night Eating (6 items). Few studies have explored night eating behaviors, yet night eating and binge eating commonly co-occur suggesting that night eating may indicate disturbed eating behavior. A composite Disturbed Eating Severity Scale score was calculated based on each of the nine scale scores categorized as normal (i.e., <75th percentile), above normal (i.e., ≥75th to <90 percentile), and well above
normal (i.e., \( \geq 90^{th} \) percentile). This scoring method permitted equal weighting across the scales and generated rankings that were congruent with the score interpretations (e.g., clinical significance) of the original instruments (see Appendix F for scoring protocol of Disturbed Eating Severity Score). The development of the Disturbed Eating Severity Scale also required establishing a method for scoring the Night Eating Questionnaire\(^{121}\) and the Binge Eating Disorder Module from the Eating Disorders Examination Questionnaire (EDE-Q)\(^91\), from which the Binge Eating and Inappropriate Compensatory Behaviors scale scores were derived.

Findings from this study revealed mean Restraint, and Eating, Weight, and Shape Concerns scale scores for most participants categorized as highly disturbed eaters did not reach the level considered clinically significant by the EDE-Q\(^{91,116}\). The reason may be because this study’s definition of a highly disturbed eater included behaviors not typically in instruments assessing eating disorders (e.g., EDE-Q, EAT-26), but which are pertinent features of disturbed eating (e.g., emotional, disinhibited, and night eating)\(^{171}\). Additionally, specific items were rephrased to be more sensitive to differences in disturbed eating practices within a DRCHC population (e.g., misuse medicine [insulin]). It is important to note that the EDE-Q is used for diagnosing patients with eating disorders, so it is not surprising that very few participants in this study met its clinical significance criteria. In addition, a comparison of results from the self-report EDE-Q (which was used in this study) with the semi-structured interview EDE-Q indicated that those who were found to have an eating disorder using the interview EDE-Q did not reach the clinically significance level for diagnosis of an eating disorder with the self-
Thus, the clinical significance level for the self-report EDE-Q may be too high. Participants categorized as highly disturbed eaters did perform one or more compensatory behavior (i.e., excessive exercise, medicine misuse, self-induced vomiting) and/or binge ate at levels of clinical significance\textsuperscript{264, 265}. That is, they either exercised excessively for $\geq 20$ or more days, and misused medicine, self-induced vomiting, and/or binge ate $\geq 4$ times in the past 28 days. Additionally, approximately 17 percent of night eaters were categorized as highly disturbed eaters, which indicated the prevalence of this behavior and confirm it is important to consider when examining disturbed eating behaviors.

These findings suggest that the newly developed Disturbed Eating Severity Scale’s categorization of those with disturbed eating compares favorably with some measures. Further examination of this new Disturbed Eating Severity Scale with a sample of individuals who have an eating disorder is important future research to validate this scale. However, this scale does appear promising in its ability to help health care practitioners identify patients with disturbed eating behaviors that could potentially escalate to a more serious condition of an eating disorder.

**Demographic Characteristics.** An examination of Disturbed Eating Severity Scores by demographic characteristics revealed that the start of female puberty was not associated with greater Disturbed Eating Severity. This finding was in contrast with previous work suggesting that females who started puberty at an early age are at increased risk for disturbed eating, possibly because of biological (e.g., hormonal pathways) processes or psychosocial factors\textsuperscript{334}. Male participants who started puberty at a later age were
significantly more likely to have increased Disturbed Eating Severity than those who entered puberty earlier. Although it makes sense that a boy entering puberty later may engage in disturbed eating practices (e.g., trying to increase intake of food [binge eat] to grow bigger or exercise excessively to build muscle mass), this finding also contrasted with research showing elevated disturbed eating in males who entered puberty at an early age\textsuperscript{334}. The differences between this study and earlier ones may be due to differences in participants’ recollection of their age when the puberty marker occurred and/or due to the different type of pubertal measurement used. For instance, the study by Zehr et al asked participants to indicate whether several pubertal milestones, such as breast development in females and facial hair growth in males, occurred earlier than, at a time similar to, or later than their peers\textsuperscript{334}. Onset of some of these pubertal markers may be more difficult to remember than the rather obvious and memorable markers (i.e., menarche and male voice change) used in this study.

The literature indicates that overweight and obese individuals are more likely to diet to lose weight and sometimes use extreme methods (e.g., laxatives, diet pills) to achieve the weight they desire\textsuperscript{331,335}. Thus, it was not surprising to see higher Disturbed Eating Severity Scores in both male and female participants who reported following a diet, having a higher BMI, and having recent weight fluctuations.

As expected, female participants who had been diagnosed with an eating disorder had significantly higher Disturbed Eating Severity Scores than other females. However, not all participants who reported having been diagnosed with an eating disorder were categorized as highly disturbed eaters, perhaps because their condition had improved since diagnosis. Unfortunately, participants were not asked to indicate when they were
diagnosed or if they still met the criteria for diagnosis of the eating disorder, so it is not possible to ascertain whether this was the case.

Research examining Disturbed Eating Severity in those with DRCHCs has been very limited, but this study’s findings showed increased disturbed eating in those with chronic diseases, in particular type 1 diabetes, cystic fibrosis, and celiac disease, as have other studies. This finding should be viewed with caution because the sample size was small and not all Disturbed Eating Severity categories differed significantly.

**Body Image Attributes.** Scores for all body image attributes (i.e., Self-Evaluative Salience, Motivational Salience, Perceptions of Body Weight, Sociocultural Attitudes Towards Appearance, and Weight Teasing) and to some extent, Body Image Intense Media Use, which are all sociocultural influencers of disturbed body image and eating, tended to increase as Disturbed Eating Severity increased. This finding lends support to the usefulness of the Disturbed Eating Severity Scale because these body image attributes reflect internalization of the thin ideal which is positively associated with disturbed eating and eating disorders in both females and males. That is, individuals who place a greater emphasis on physical appearances and subscribe to societal norms of unrealistic body size are at increased risk for disturbed eating.

Social Comparison Theory and Gerber’s Cultivation Theory posit that exposure to the mass media portrayal of the thin ideal of females can have adverse effects on body image. Females who compare themselves to idealized images of beauty (i.e., upward social comparisons) that are unachievable, are more susceptible to feelings of body dissatisfaction and likely to engage in unhealthy weight control behaviors. Furthermore, Gerber’s Cultivation Theory posits that the more media people are exposed
to, the more they will begin to view the mass media images as realistic\textsuperscript{340}. Results from this study lend support to the Social Comparison Theory and Cultivation Theory because as exposure to body image intense media (i.e., TV, magazines, websites) increased, Disturbed Eating Severity Scale scores rose significantly in females.

Participants who reported being weight teased as a child, regardless of the type of weight teasing insults received (i.e., name called fatso, made fun of, or laughed at), had significantly higher Disturbed Eating Severity Scale scores and were more upset after teasing incidents than those who were not teased. Weight teasing insults can be detrimental to children because they promote negative body image and low self-esteem, factors that may promote the initiation of disturbed eating practices that can have a harmful and long-lasting effect\textsuperscript{301,319}. Thus, anti-bullying messages targeted to youth likely should incorporate information to prevent weight teasing\textsuperscript{342,343}.

Psychological Characteristics. Anxiety, Depression, and OCD severity scores increased as Disturbed Eating Severity Scale scores rose in female and male participants. This finding further demonstrates the robustness of the Disturbed Eating Severity rankings developed in this study in that anxiety, depression, and OCD are well recognized co-morbidities of eating disorders\textsuperscript{280,344-346}. For instance, negative mood and stress, as it relates to anxiety and depression, are the most frequently cited precipitants to binge eating\textsuperscript{310,347}. What is less clear is whether these co-morbidities are precursors to or manifestations of eating disorders\textsuperscript{348}.

Intrapersonal Characteristics. Study findings related to intrapersonal characteristics (i.e., individual processes) associated with disturbed eating (i.e., Self-Esteem, Health
Value, Mentally and Physically Unhealthy Days, Stress and Coping, Regulation of Emotion, and Dichotomous Thinking) are congruent with those reported in the literature\textsuperscript{229, 235, 349, 350}. For instance, participants with lower levels of self-esteem had significantly higher Disturbed Eating Severity Scores, and these same participants reported more mentally and physically unhealthy days (i.e., Quality of Life) than participants with high self-esteem. It could be expected that, as an individual’s mental and physical health declines, their quality of life and overall self-esteem levels would suffer\textsuperscript{351}. However, it is unclear if the decrease in quality of life and self-esteem are antecedent or subsequent factors of disturbed eating, but data from this study suggested the firmly since scores increased significantly across disturbed eating severity categories.

Coping is defined as an attempt to manage demands that are perceived as stressful, as well as emotions generated\textsuperscript{254}. Having appropriate coping skills to deal with stress and being able to regulate emotions (i.e., emotional intelligence), and not necessarily stress itself, are thought to play a protective role in preventing disturbed eating behaviors\textsuperscript{18}. The significantly lower reliance on task-oriented coping (a positive coping mechanism that addresses the problem causing distress), lower regulation of emotion (i.e., ability to carry out accurate reasoning about emotions and ability to use emotions and emotional knowledge to enhance thought), and higher reliance on emotion-oriented coping (a negative coping mechanism dependent on emotions) as Disturbed Eating Severity increased, supports previous investigations reporting increased emotion-oriented coping and decreased task-oriented coping and regulation of emotions as dieting, bingeing, disordered eating attitudes, and eating disorders in females increased\textsuperscript{235, 352-355}. 
Additionally, the presence of dichotomous thinking (i.e., presence of rigid “black and white” or “good and bad” cognitive thinking) was elevated in those who were highly disturbed eaters. Findings related to this trait support published research reporting a positive association between rigid thinking and disturbed eating and eating disorders.\textsuperscript{350, 356, 357}

Interestingly, no associations were found between rating of one’s health and Disturbed Eating Severity. Comparison data could not be located in the literature. The findings from this study suggest that this characteristic may be unrelated to Disturbed Eating Severity.

**Family and Social Environment Characteristics.** All family and social environment characteristics (i.e., Mealtime Communication-Based Stress, Appearance Weight Control, Emphasis on Mother’s Weight) that assessed experiences when growing up increased with Disturbed Eating Severity except Mealtime Structure (i.e., pressures to eat during family mealtimes as a child). Women in particular recalled more weight control pressures than men, which likely reflects the sociocultural pressures placed on girls at a young age\textsuperscript{358} and may possibly be a key influencer of their eating behaviors later on in life\textsuperscript{199}. The findings from this study are in congruence with previous studies where female bulimics and repeat dieters collected that childhood family mealtime experiences were negative\textsuperscript{220}. Thus, negative family mealtime environments appear to be yet another key influencer of disturbed eating\textsuperscript{220}. 
PREDICTING DISTURBED EATING BEHAVIORS

Putative risk factors for eating disorders are usually divided into three categories, which are individual, family, and sociocultural\textsuperscript{189, 331, 359}. This study took a comprehensive look at these factors, measuring them with reliable instruments, (shortened to keep survey length under control to minimize participant burden) and used them to create a model for predicting disturbed eating. The independent variables meeting the carefully set criteria for inclusion in the predictive model were Depression, Dichotomous Thinking, Pressures from the Media, Mealtime Communication-Based Stress, Weight Teasing Frequency, and OCD severity. Others also have reported these independent variables as strongly associated with disturbed eating\textsuperscript{199, 301, 360-362}.

The final predictive model for all EBS, all female EBS, and healthy EBS participants included Depression, Dichotomous Thinking, Pressures from the Media, and Frequency of Weight Teasing as a child and accounted for nearly half of the associated variance with Disturbed Eating Severity. Collectively, these four variables were assessed with just 16 items. The all male EBS participants’ Disturbed Eating Severity predictive model was almost as strong as the female model and included the same independent variables as the female model with the addition of Mealtime Communication-Based Stress (an additional 5 items). Although the pressures placed on children and adolescents during family mealtimes have been associated with disordered eating in females, no studies with males could be located\textsuperscript{222}. The fact that this factor entered the predictive model for males and not females indicates a need for future study.

It is difficult to compare the prediction model generated in this study with previous work because earlier studies tended to focus on females and/or specific
subgroups (e.g., bulimia nervosa patients), did not include a comprehensive array of demographic and psychographic variables, did not include only variables of theoretical and statistical importance, and/or were not intended to predict disturbed eating behaviors. For instance, Neumark-Sztainer et al. developed an eating disorder risk factor model using data from high school girls. The final model included both personal and sociocultural factors that explained 66 percent of variance of disordered eating. The purpose of this study was not to predict disordered eating behaviors per se, but rather to determine which behaviors could be addressed in disordered eating prevention programs. Thus, many factors examined in the study reported here, such as depression, were not considered suitable variables to be included in their model because they were inappropriate to address in a classroom setting.

The prediction model generated with only DRCHC participants included three of the same variables (i.e., Depression, Pressures from the Media, Dichotomous Thinking) that were in the model of healthy EBS participants and explained 53 percent of the variance in Disturbed Eating Severity. Thus, only three variables (i.e., 13 questionnaire items) predicted more than half of the disturbed eating severity in young adults with DRCHC. Further examination of prediction models for just bowel-related DRCHC and type 1 diabetes DRCHC participants found two variables (i.e., Depression and Pressure from the Media) predicted 48 and 62 percent, respectively, of the variance in Disturbed Eating Severity. However, these prediction models should be viewed with caution as heteroscedasticity was introduced in these models due to small sample sizes.

Previous studies with Disturbed Eating Severity prediction models for just the DRCHC population are limited. A single study was located that reported a prediction
model for disturbed eating onset in females with type 1 diabetes. This study reported that BMI percentile, weight concerns, shape concerns, physical appearance, self-worth, and depression were among the strongest univariate predictors, predicting 48 percent of the variance, lower than that of this study. As in the study reported here, depression was one of the strongest predictors.

The prediction models indicate that depression is a strong predictor of disturbed eating in all groups studied. In addition, viewing food as either good or bad (i.e., dichotomous thinking) is another strong predictor of disturbed eating in young adults with and without DRCHCs. The 13 questionnaire items in 3 scales that accounted for more than half of the variance in Disturbed Eating Severity in all DRCHC participants may enable healthcare providers to efficiently assess disturbed eating risk and severity in patients with DRCHCs during regular clinical visits.

RESEARCH QUESTION 1 SUMMARY

Which demographic and psychographic characteristics are associated with the presence of disturbed eating behaviors in young adults?

This study found numerous demographic and psychographic (i.e., psychological, body image attributes, intrapersonal, family and social environment) characteristics differed significantly among Disturbed Eating Severity categories (see Tables 29 to 57). The demographic characteristics were BMI, Current Health Status, Diagnosis of an Eating Disorder, and Dietary Regimen Followed. The following psychographic characteristics were found to be associated: Self-Evaluative Salience, Motivational Salience, Weight Teasing, Pressures from the Media, Internalization from the Media, Use
of Body Image Intense Media Viewings, Depression, Anxiety, OCD, Self-Esteem, Health Value, Mentally and Physically Unhealthy Days, Task- and Emotion-Oriented Coping, Dichotomous Thinking, Regulation of Emotion, Perceptions of Body Weight, and recollection of family Mealtime Communication-Based Stress, Appearance Weight Control, and Emphasis on Mother’s Weight. Of these, the characteristics explaining nearly half of the variance in predicting Disturbed Eating Severity in all EBS participants, all healthy participants, all females, all males, and all DRCHC participants were Depression, Pressures from the Media, Weight Teasing, and Dichotomous Thinking. In addition, Mealtime Communication-Based Stress entered the equation for males. For bowel-related and type 1 diabetes DRCHC participants, prediction models contained only two of these characteristics (i.e., Depression and Pressures from the Media) which explained nearly half or more of the variance in Disturbed Eating Severity, but these results must be viewed with caution because of heteroscedasticity.

However, the three predictors common across these groups’ (only 2 for bowel-related and type 1 diabetes DRCHC participants) prediction models, include a total of 13 items (12 for bowel-related and type 1 diabetes DRCHC participants), with the scale for each predictor having good reliability. Thus, the findings from this study suggest that healthcare providers could identify increased disturbed eating risk quickly in a routine office visit using 13 (or 12) easy to administer Likert-type items (see Appendix H) and provide appropriate interventions early when disturbed eating is most treatable. Previous studies have attempted to develop quick and easy disordered eating screening tools but are limited to their strength for determining those with disordered eating and/or were tested in non-diverse, small sample sizes with some studies using non-validated
instruments. Although these three predictors account for only half of the disturbed eating risk, other tools were more lengthy and difficult, and were not sufficiently tested in a diverse population with DRCHCs, and/or had less predictive power. These findings also provide direction for nutrition and health communication campaigns and interventions. For example, helping consumers, as well as the media, avoid categorizing or labeling food in moral terms (“good vs. bad”) could help individuals avoid feelings of guilt or shame after indulging in “bad” foods or punishing themselves for consuming them using methods (e.g., strict dieting, purging, berating oneself) that may precipitate disturbed eating behaviors. Numerous anti-bullying campaigns have been launched in recent years; the findings of this study underscore the importance of incorporating weight teasing in these campaigns. Although many studies have linked body-image intense media to body image dissatisfaction, this study indicates that this type of media also is associated with disturbed eating behaviors. Parents and other child care givers may be able offer their children some protection from disturbed eating by promoting the use of media that is not body image intense. The findings from the males in this study lend further support to the need to help parents understand the value and protective nature of mealtime communications that are not stressful.

COMPARISONS OF YOUNG ADULTS WITH AND WITHOUT DRCHC

To determine whether demographic and psychographic characteristics related to disturbed eating differed between those with and without DRCHCs, a matched case-control design was used. In general, there were more DRCHC females than DRCHC males and the majority of DRCHC participants had a bowel-related DRCHC (i.e.,
irritable bowel syndrome [IBS] or celiac disease). Research indicates that IBS and celiac disease are more prevalent in young adult females than males which explains the gender differences\(^{371,372}\).

Significantly more DRCHC participants were White compared with their healthy counterparts. This finding is likely because in the United States, type 1 diabetes mellitus, cystic fibrosis, and inflammatory bowel diseases are most prevalent in non-Hispanic Whites\(^{372-375}\). In addition, celiac disease is extremely rare in people of African, Chinese, or Japanese descent and is more common in those of Italian descent (i.e., Whites)\(^{371}\).

DRCHC participants were about five times more likely to be older than their healthy counterparts. However, the mean age difference was only one year. The DRCHC individuals may have been older because participants with DRCHCs also were recruited from non-university institutions or they may have experienced a slower rate of progress in school due to complications with their illness. The DRCHC participants were also significantly more likely to have poorer health status than the control group. This was anticipated because chronically ill young people are more likely to have lower levels of emotional well-being and more hardships compared with healthy peers\(^{1,3}\).

In this study, DRCHC participants were two times more likely to currently have health insurance than control participants. Having a DRCHC requires a great amount of medical attention and care. Not having health insurance would be a financial burden due to the associated costs involved with medical care and regular prescription drug treatments\(^{376}\). Thus, DRCHC participants (and their parents) may be more educated about the importance of having health insurance and were more motivated to ensure they had health insurance compared with their healthy counterparts\(^{377}\).
Bowel movement irregularities were significantly different between case and control participants. As expected, participants with bowel diseases (i.e., Crohn’s disease, ulcerative colitis, and IBS) were nearly seven times more likely to have abdominal pain or discomfort that led to changes in frequency of bowel movements in the past three months than healthy counterparts\(^8\).

DRCHC participants were seven times more likely to indicate they followed a special dietary regimen than their healthy counterparts. Interestingly, DRCHC participants were two times more likely to have been diagnosed with an eating disorder than controls. Being at increased risk for an eating disorder due to a chronic medical condition is not well understood\(^15,378\). The findings from this study suggested that DRCHC increased eating disorder risk; however, causality cannot be confirmed due the cross-sectional nature of this study. Well-designed prospective studies are needed to determine whether the eating disorder occurred before or after the DRCHC diagnosis.

Results of demographic characteristic analyses of the matched case-control sub-samples of bowel-related DRCHC and type 1 diabetes DRCHC participants were similar to those that included all matched cases. Exceptions for bowel-related DRCHC participants were that they were 50 percent less likely than their matched controls to maintain a stable weight over the past month and type 1 diabetes DRCHC cases were 35 percent more likely to report later onset of puberty than their matched controls.

**Psychographic Characteristics of Matched Case-Control Participants**

Of the nine eating behaviors explored in matched case-control DRCHC participants, the only significant differences were inappropriate compensatory behaviors
(i.e., misuse of medicine and excessive exercise). That is, DRCHC participants were significantly more likely to misuse medicine and exercise excessively to control their weight than control participants.

Previous research has shown that females with type 1 diabetes who misuse their insulin, often called “diabulimia”, to control their weight are at increased risk for eating disorders\(^4^3, 2^1^6, 3^7^9\). However, type 1 diabetes DRCHC matched cases were not significantly more likely to misuse medicine (e.g., insulin).

The use of excessive exercise to control one’s weight in those with DRCHCs has not been well studied. The cystic fibrosis DRCHC participants in this study reported exercising excessively. This may be because cystic fibrosis patients are usually encouraged to aerobically exercise because it helps with their breathing\(^3^8^0\). A focus group study with adolescent IBD patients found they tried to modify parts of themselves perceived as “defective” or “undesirable” by their peers, sometimes using exercise in an effort to “fit in”\(^8^2\).

The constant need to monitor one’s health, which is often measured by weight status, along with trying to “fit in” with peers may compel DRCHC youth to use inappropriate compensatory behaviors\(^3^8^1\). This is of great concern because the consequences of misusing insulin or other medication used to treat medical conditions can have detrimental and harmful effects\(^5^8, 3^8^2\).

DRCHC participants were significantly more likely to be categorized as “disturbed” on the Disturbed Eating Severity scale than controls. Further examination by DRCHC type indicated bowel-related DRCHC participants were significantly less likely to be in the “non-disturbed” and significantly more likely to be in the “disturbed”
category on the Disturbed Eating Severity Scale than control participants. They also were significantly more likely to have greater Eating and Shape Concerns than matched control participants, which was in congruence with other reports. Type 1 diabetes DRCHC matched case-controls were less likely to be in the “non-disturbed” category on the Disturbed Eating Severity Scale than controls. On the other hand, cystic fibrosis participants were significantly less likely to be categorized as “highly disturbed” on the Disturbed Eating Severity Scale than controls. Investigation of Disturbed Eating Severity and eating behaviors in a larger sample size of DRCHC participants by DRCHC type is warranted.

**Body Image Attributes.** Of all the body image attribute characteristics examined in this study, only three differed significantly between matched case-control participants. These were Weight Teasing History, Upset Level from being Weight Teased, and Information from the Media.

As a child, DRCHC participants reported receiving significantly more types of weight teasing insults (i.e., made fun of, laughed at) and being more upset from these weight teasing insults than their healthy counterparts. Youth with medical conditions are considered “different” relative to their peers and may be at risk for being stigmatized based on their health condition. This type of stigmatization includes weight teasing with these occurrences happening even more so when youth are overweight or obese. Bowel-related DRCHC participants also were significantly more likely to report being weight teased as a child than their control, but this was not the case with DRCHC type 1
diabetes DRCHC cases. Further examination of the effect of weight teasing on DRCHC participants warrants consideration in future studies.

Interestingly, DRCHC participants were significantly less likely to be affected by the messages in the media related to physical attractiveness. This is a rather unique finding, as it seems that a DRCHC may offer some protection against sociocultural media effects felt by healthy participants\(^{358}\). It could be that DRCHC participants worry more about managing their own health condition and have little time to be bothered with media pressures. These same findings were found when only bowel-related DRCHC participants were compared to their matched controls, but were not seen with type 1 diabetes DRCHC matched case-control participants.

**Psychological Characteristics.** Depression and anxiety scores were significantly higher in DRCHC participants than control participants. Other population-based and clinical studies have shown higher rates of psychiatric disorders in children and adolescents with chronic health conditions, especially depression and anxiety disorders, than in healthy peers\(^{44, 133, 384}\). The higher depression and anxiety scores of DRCHC participants is of clinical significance to healthcare providers, especially because eating disorders often co-occur in persons with high levels of depression and anxiety severity\(^{385}\). Interestingly, bowel-related DRCHC participants were also significantly more likely to have increased OCD severity than controls. This is in congruence with other reports indicating the comorbidity of OCD and bowel diseases\(^{386}\).
**Intrapersonal Characteristics.** DRCHC cases were significantly more likely to place great value on their health than controls. This may be because DRCHC participants are constantly reminded of their health and its impact on their quality of life and life span and because healthy young adults are not as health responsible\(^3\).  

It was not surprising to find mentally and physically unhealthy days were higher in cases than controls\(^1\). Research had indicated that youth with childhood disabilities, such as type 1 diabetes, were four times as likely to be hospitalized and had eight times as many total hospital days as the general population\(^2\). Young adults (18 to 24 years old) also suffered more mental health distress days in a month than any other age group, and diagnosis with a chronic disease increases this even more\(^3\).  

Additionally, DRCHC participants were significantly more likely to spend time with a special person when faced with a stressful situation than healthy counterparts. Young adults who grow up with a chronic condition take longer to achieve milestones than healthy peers and may experience a more difficult transition to young adulthood and independence\(^3\). Thus, youth with DRCHCs may seek social support to cope with their health condition and for guidance\(^3\). This same finding was true for bowel-related DRCHC sub-group, but not with type 1 diabetes DRCHC sub-group.  

**Family and Social Environment.** DRCHC participants were significantly more likely to recall less family mealtime structure and were less pressured as a child to eat certain foods and clean their plates during family mealtimes than healthy peers. This may be because parents of DRCHC participants were supportive and flexible in helping their children meet their dietary needs, perhaps because a significantly higher number of
DRCHC participants’ families (such as parents) had a history of DRCHCs. Indeed, DRCHC participants recalled their mothers’ weight was greatly emphasized when growing up. The impact of having a child with a chronic health condition may cause family distress, particularly for parents. Few studies have explored childhood family mealtime experiences recalled by young adults with DRCHCs. However, Mellin et al reported that adolescent girls with type 1 diabetes who were raised by parents who engaged in weight loss behaviors and/or made negative comments about eating or weight were significantly more likely to be disordered eaters and have less family mealtime structure (i.e., less than 1 time per week or never having family dinners). The results for the Type 1 diabetes DRCHC participants in this study supported this finding, as they were significantly more likely to report growing up with a greater emphasis being placed on their mother’s weight and with less mealtime structure than controls. The parental role in the care of a DRCHC child may be even more challenging when parents also are dealing with their own dietary management issues. And these findings may be something to incorporate into the education of the parents during medical visits.

**RESEARCH QUESTION 2 SUMMARY**

Do young adults with DRCHCs differ from those without DRCHCs with regard to demographic and psychographic characteristics, and presence and degree of disturbed eating behaviors?

Young adults with DRCHCs differ from those without DRCHCs in terms of demographic (i.e., race, age, health insurance status, bowel irregularities, diagnosis of an eating disorder) and psychographic characteristics (i.e., Excessive Exercise, Misuse of
Medicine, Shape Concerns, Weight Concerns, Weight Teasing, Information from Media, Health Value, Mentally and Physically Unhealthy Days, Depression, Anxiety, OCD, Avoidant Coping, Family Mealtime Structure as a child, and Emphasis Placed on Mother’s Weight as a child). Even though Disturbed Eating Severity scores did not differ between matched case-control DRCHC participants, percentages in the Disturbed Eating Severity categories did differ. That is, DRCHC participants were significantly more likely to be categorized as “disturbed” eaters than healthy young adults. Additionally, DRCHC participants were two times more likely to have been diagnosed with an eating disorder than healthy participants. This alarming finding indicates the importance of screening DRCHC participants to identify those who may be at risk for eating disorders. Bowel-related DRCHC participants were significantly more likely to be categorized as “disturbed” eaters and exercise excessively as a means of controlling their weight than healthy participants. Type 1 diabetes DRCHC participants were significantly less likely to be categorized as a “non-disturbed eater”. Cystic fibrosis DRCHC participants were significantly more likely to exercise excessively as a means of controlling their weight, but were significantly less likely to be categorized as “highly disturbed” eaters. Findings from this study may help health professionals recognize demographic and psychographic attributes of young adults with DRCHCs that may increase their risk of disturbed eating and offer early treatment, which in the long run can improve their quality of life. They also indicate a need for further study.
FOLLOW-UP EATING BEHAVIOR SURVEY (FEBS) PARTICIPANTS

FEBS DRCHC responders differed from non-responders on some demographic (i.e., age, BMI) and psychographic (i.e., Inappropriate Compensatory Behaviors, Disturbed Eating Behavior Severity Score, Weight Teasing Frequency, Number of Weight Teasing Insults, Types of Weight Teasing Comments [i.e., being laughed at and/or name called], Information from Media, and Perceived Weight Status at 10th grade and Now) characteristics. FEBS non-responders had higher scores on many psychographic measurements than responders, perhaps accounting for why they did not participate in the FEBS. Despite these differences, EBS and FEBS DRCHC participants did not differ significantly in Disturbed Eating Severity Categories.

DRCHC participants were diagnosed with their condition at a mean age of 15 years, and as expected, age of diagnosis varied among DRCHCs for biological reasons. For instance, cystic fibrosis participants tended to be diagnosed early in life (i.e., at birth), while those diagnosed with type 1 diabetes, celiac disease, IBD, and IBS were diagnosed later\textsuperscript{77,393}. It is important to note that the mean age of diagnosis was around puberty, which can compound the difficulties typically associated with this life stage\textsuperscript{394}.

Medical complications were reported by approximately 20 percent of DRCHC participants, which may at least partly explain the large difference in number of mentally and physically unhealthy days they reported in comparison with healthy participants\textsuperscript{395}. Significantly, 26 percent of the participants reporting medical complications were categorized as disturbed or highly disturbed eaters. The relationship between disease
severity, medical complications, and degree of disturbed eating warrants further investigation.

More than half of FEBS DRCHC participants followed a diet to manage their health condition and indicated they followed it either very closely or closely. More than a third of those with IBD and IBS did not follow a diet, perhaps because IBD and IBS disease severity varies and, in some instances, a strict dietary regimen may not be necessary\textsuperscript{139}. Also, IBS is closely associated with psychological characteristics (e.g., anxiety, depression), so a strong emphasis is placed on psychological and pharmacological treatments rather than diet\textsuperscript{396}.

Although type 1 diabetes patients tended to report following a strict dietary regimen, most had poor glycoslyated hemoglobin levels. Additional analysis examining the relationship between Disturbed Eating Severity and blood glucose control in these participants was not possible due to a small sample size. However, previous research has shown increased disturbed eating in type 1 diabetes patients with poor blood glucose control\textsuperscript{49}. Misusing insulin in an attempt to control body weight causes uncontrolled blood glucose levels and myriad other health complications\textsuperscript{49}. A previous study with young adult females with type 1 diabetes found over a third misused insulin to control their weight\textsuperscript{94}. In this study, only 2 of the 21 type 1 diabetes participants (1 male and 1 female) reported misusing medicine to control body weight, but it is uncertain if they were manipulating their insulin or using other forms of medicine (e.g., laxatives).

The role of healthcare providers in helping DRCHC patients manage their health condition is vital\textsuperscript{397, 398}. As expected, DRCHC participants had more frequent visits with healthcare providers when first diagnosed than currently. Healthcare providers typically
were general physicians and/or gastroenterologists. Interestingly, less than a fifth visited a registered dietitian when first diagnosed even though dietary management plays a vital role in treatment of most DRCHCs. Because the relationship and communication status between healthcare providers was reportedly okay to good, additional visits with other healthcare providers may have not been considered necessary.

The cost of medicine and food for dietary management of DRCHC participants did not present a barrier to management of their condition. This finding might not have been the case if a majority of them lacked health insurance and were of lower socioeconomic status. The DRCHC participants in this study can be considered of higher socioeconomic status, based on their social status (i.e., education level mostly college or college graduate), which likely increased their access to medicine, food, health insurance, and adequate health. Also, socioeconomic status is associated with better overall health, and higher education levels with greater knowledge of one's health condition\textsuperscript{399}, however those with DRCHCs did have significantly more unhealthy days than their non-DRCHC counterparts. Given the socioeconomic and education level of these individuals, it is likely that those with lower levels would have even more unhealthy days. Future research should seek to collect data from a more sociographically and educationally diverse group of young adults.

DRCHC participants used positive (Active Coping, Planning, and Acceptance Coping) coping mechanisms more often than negative (Denial, Substance Abuse, Behavioral Disengagement, Self Blame) ones when faced with a problem. Interestingly, there were no significant gender differences in coping mechanisms used even though studies have shown gender differences in coping\textsuperscript{305}. Youth with poor adherence to
disease management often use avoidant and negative coping strategies (e.g., behavioral disengagement, self blame) and in consequence have a poorer overall quality of life and health outcomes. In contrast, positive coping behaviors are associated with increased quality of life in DRCHC populations. More than half of DRCHC participants in this study reported adequate compliance with dietary management of their health condition and relatively a good quality of life, thus the frequent use of negative coping strategies may be a reflection of denial or guilt when adherence is poor.

DRCHC participants exhibited very few abnormal illness behaviors probably because they were able to appropriately and positively cope with their health conditions better than other DRCHC populations studied previously. As reported by others, males were more likely to avoid sharing their feelings with others (i.e., Affective Inhibition [emotion-focused problem]), while women were more likely to be afraid of their illness (i.e., General Hypochondria). Women also have a tendency to worry more about disease complications (i.e., General Hypochondria) than men, and with the fear of medical complications being more elevated when first diagnosed with a health condition.

Most DRCHC participants reported following a diet for their health condition very closely and felt very knowledgeable about their condition, so it was logical that they would have greater healthy eating self-efficacy. That is, they felt confident they could eat healthy foods and perceived the barriers to healthy eating were low. Adequate self-management of DRCHCs involves being competent at and motivated to manage one’s health condition (e.g., healthy eating self-efficacy), along with having positive support from healthcare providers and loved ones. A recent review by Barlow et al, suggests
patients who have positive self-management skills, have increased quality of life and better health outcomes. Finding from this study did not find a significant correlation between healthy eating self-efficacy and quality of life and number of mentally and/or physically unhealthy days, which runs counter to findings reported by Barlow et al, perhaps because healthy eating self-efficacy is only one of the many types of self-management skills needed. However, quality of life was significantly correlated with total number of mentally and physically unhealthy days. Thus, healthcare providers may need to provide services other than healthy eating self-efficacy related to self-management skills for youth with DRCHCs, so they can feel confident in their abilities to appropriately manage and cope with all aspects of the treatment for their health condition.

**Disturbed Eating Severity**

Although non-significant, there was an inverse relationship between greater Disturbed Eating Severity and time since diagnosis with DRCHC. Longitudinal studies in type 1 diabetes have suggested that even mild symptoms of disturbed eating, as found in this study, are likely to persist and get worse overtime. Because DRCHC participants in this study were fairly newly diagnosed, there is a possibility that their disturbed eating behaviors could become more severe as they continue to manage their chronic health condition overtime. This suggests a need for a longitudinal study to determine if Disturbed Eating Severity increases as time after diagnosis increases.

A non-significant trend indicated that highly disturbed eaters had poorer relationships/communications and satisfaction with health care providers currently and at diagnosis. Previous studies have demonstrate the importance of the dynamic healthcare
team and patient relationship. Further, this study suggests that an registered dietitian would be a good addition to a DRCHC healthcare team. Additionally, as the perception of the economic barriers of specialized food and medicine increased, so did Disturbed Eating Severity, regardless of whether or not they were newly diagnosed. Being unable to afford specialized food to manage a DRCHC can be detrimental to health, and in this case may have a harmful long-term effect on eating behaviors and increase Disturbed Eating Severity.

Furthermore, a lack of health insurance was significantly more common as Disturbed Eating Severity increased. The chronic care model developed by Wagner and colleagues demonstrates the value of adequate health care in improving health outcomes (i.e., quality improvement management) for various chronic conditions. In brief, the health-care system and its design are part of a supportive network that help improve outcomes of disease management and quality of life. Thus, the healthcare system and its design (e.g., affordable healthcare and food/medicine) are integral to assuring productive interactions with patients and healthcare professionals that lead to improved clinical outcomes. As reported in this study and others, having health care providers who are perceived as providing good relationships/communications and satisfaction, along with lack of barriers to medicine and food, make an important difference in patients’ quality of life. The evidence suggests that a supportive healthcare team is important for DRCHC management and preventing disturbed eating behaviors.

Two negative coping strategies, Behavioral Disengagement (i.e., giving up when experiencing a problem) and Self Blame (e.g., I blame myself for things that have
happened) were the only coping mechanisms that differed among Disturbed Eating Severity Categories. Highly disturbed DRCHC participants were significantly more likely to just give up when experiencing a problem or criticize themselves than less disturbed eaters. Similarly, Grylli et al found that girls with type 1 diabetes were more likely to use wishful thinking and self-blame as a coping mechanism (i.e., negative coping strategies)\textsuperscript{38}. Their study, along with this study, indicated an association between negative coping strategies (e.g., self blame) and disordered eating behaviors.

Highly disturbed DRCHC participants were significantly more likely to have higher General Hypochondria (i.e., fear of illness), Psychological Perception of Illness (e.g., viewing illness as punishment), and Disease Conviction (i.e., health anxieties) scores than less disturbed eaters. These findings support previous research reporting that ill participants with greater disturbed eating behaviors often blame themselves for their condition\textsuperscript{38}. In addition, previous research has found associations between health worriers and food preoccupations/dieting behaviors\textsuperscript{408}. Similarly, DRCHC participants in this study who had greater health anxieties (disease conviction) and worry about their health complications (general hypochondria) had higher disturbed eating severity.

There were no significant differences among Disturbed Eating Severity categories and Healthy Eating Self-Efficacy scores. However, comparable to previous findings\textsuperscript{409}, an inverse relationship was seen with higher healthy eating self-efficacy scores in non-disturbed eaters compared with highly disturbed eaters.

As Disturbed Eating Severity increased, Quality of Life decreased significantly, thereby supporting other studies\textsuperscript{49,410}. Findings from this study and others\textsuperscript{410} support the
opinion that negative body image and food avoidance heavily influence quality of life in DRCHC young adults.

**RESEARCH QUESTION 3 SUMMARY**

Does the presence and degree of disturbed eating behaviors in young adults with DRCHCs differ by gender, BMI, age of diagnosis, age of puberty, type of DRCHC, relationships with healthcare providers, barriers to following healthcare providers advice, access to health insurance, and other disease-specific psychographic characteristics?

The presence and degree of Disturbed Eating Severity in this study population did not differ by gender and certain disease-specific psychographic characteristics (i.e., healthy eating self-efficacy, some abnormal illness behaviors [i.e., Affective Inhibition, Irritability] and all coping mechanisms, except for Behavioral Disengagement and Self Blame. Disturbed Eating Severity does differ by BMI, diagnosis of IBS, age at diagnosis of DRCHC, age of maturation (i.e., puberty onset), relationships/communications and satisfaction with healthcare providers, access to health insurance, barriers to following healthcare providers’ advice (i.e., money to purchase medicines and specialized dietary foods) as well as some disease-specific psychographic characteristics (i.e., some abnormal illness behaviors [i.e., General Hypochondria, Psychological vs. Somatic Perception of Illness, Disease Conviction], and quality of life). Thus, the results appear to indicate that health care professionals should take special care to develop positive relationships/communications with youth and young adults suffering from DRCHCs, especially right after they are diagnosed.
Adolescents with DRCHCs infrequently receive health risk screening for other health conditions\textsuperscript{411–413}. Suris et al suggests this could be because adolescents with chronic health conditions are less likely to be seen alone by their doctor, which provides less opportunity for confidential consultations, which are known to be associated with increased likelihood of discussing sensitive health risk behaviors, such as disturbed eating behaviors\textsuperscript{381}. Thus, it seems healthcare providers are an untapped, yet influential role in screening for health risk behavior as it relates to disturbed eating behaviors in youth with DRCHCs. Utilizing the Chronic Care Model with the healthcare professional community, as was recently found to result in improved medical outcomes in adults with type 2 diabetes\textsuperscript{414}, and may prove useful when addressing disturbed eating in youth and young adults with DRCHCs.

**Limitations**

The findings of this study must be considered in light of its limitations. First, the sample size was limited to young adults mostly enrolled at a single institution of higher education and therefore may not be generalizable to the young adult population as a whole. However, this institution’s enrollment includes students from numerous states and other nations. Additionally, these participants were racially diverse and were from a wide variety of majors. Thus, this sample likely reflects the young adult population enrolled in public universities in the United States.

A second limitation is the small sample size of participants with each DRCHC, despite rigorous recruitment efforts. The number of participants with DRCHCs recruited did exceed national per thousand rates for type 1 diabetes (8 vs. 3.5), cystic fibrosis (3.4
vs. 0.4), celiac disease (13 vs. 5.8), inflammatory bowel diseases (9.5 vs. 0.3-1.0) and irritable bowel syndrome (29.3 vs. 6)\textsuperscript{36,37,77,82}. A further limitation was the low response rates to the follow-up eating behavior survey (FEBS) despite multiple invitations to and an incentive. Unfortunately, participants were not asked to indicate when they were diagnosed or if they still met the criteria for a diagnosis of an eating disorder, so it is not possible to ascertain whether this was the case.

The cross-sectional design of the survey limits the assignment of temporality to the findings; however, it has served well as hypothesis generating research and provides the basis for more prospective designs.

Additionally, this is the first time the Disturbed Eating Severity Score that encompasses other disturbed eating behaviors (i.e, emotional eating, disinhibited eating, night eating) not typically included in other eating disorder risk assessments has been used. Therefore, the validity of this measure of Disturbed Eating Severity warrants further investigation. However, the scales comprising the Disturbed Eating Severity Score had good internal consistency (i.e., Cronbach alpha \( \geq 0.71 \)). Also, nearly all psychographic instruments used in this study known to be associated with disordered eating differed significantly in synchrony with Disturbed Eating Severity categories. This further supports the construct validity of the Disturbed Eating Severity Score.

**Strengths**

Despite the limitations of this study, there are many strong points. This study’s sample of young adults was large, very diverse, and from a non-clinical setting. The variety of recruitment strategies and intensity with which they were applied helped to
recruit participants with DRCHC at rates two or more times higher than national rates. Online administration also made it easy, convenient, and confidential for participants and yielded valuable and meaningful results.\textsuperscript{415}

This study is the first to comprehensively assess demographic and psychographic characteristics previously linked with disturbed eating. A thorough examination and careful selection of valid instruments to measure psychographic characteristics, support the value and usefulness of the data. In addition, the methods used to shorten instruments (e.g., factor loadings) to reduce participant burden were justified by the good internal consistency scores.

This study went a step further than others by developing a predictive model for disturbed eating, along with creating a novel Disturbed Eating Severity score. No studies could be located that have attempted to meticulously develop a predictive model for disturbed eating in a non-eating disordered, non-clinical young adult population with and without DRCHCs. This model predicts approximately half the variance in disturbed eating severity using 13 items (see Appendix H) that can be easily administered by health care professionals during regular clinical visits.

In addition, the Disturbed Eating Severity Scale defined disturbed eating more comprehensively than has been done previously incorporating factors related to eating disorders that heretofore have not been included in existent instruments measuring disturbed eating. The score generated by this scale is strongly associated with other known disordered eating risk factors (i.e., good construct validity). The Disturbed Eating Severity Scale has shifted the focus from diagnosis of an eating disorder (after the fact) to trying to identify precursor behaviors (risk factors). Identification of these precursor
behaviors may enable health professionals to intervene earlier, when treatment is more effective. 

Previous research has been limited and has focused on individual DRCHCs in examining eating disorder risk. By matching DRHC cases with healthy control participants, this study has helped to identify disturbed eating behaviors unique to the DRCHC population.

The demographic and psychographic characteristics found to be strongly associated with disturbed eating severity in DRHC and non-DRHC participants can provide guidance for health care providers. For instance, health campaigns and interventions that help parents teach children to not categorize foods in moral terms (“good vs. bad”), stop weight teasing episodes among children and adults, and offer children media that is not body-image intense may reduce disordered eating severity. Thus, results from this study may be extremely helpful for health care providers in becoming more aware and cognizant in assessing disordered eating in this at risk population and providing suitable interventions. Finally, the study reveals the importance of bringing the expertise of a registered dietitian into the clinical armamentarium of chronic disease treatment.

Conclusions

In conclusion, this study calls attention the need to screen and monitor disturbed eating behaviors in young adults, especially given that nearly one-third of the young adults in this study were either disturbed or highly disturbed eaters. Disturbed eating behaviors can be detrimental to overall quality of life and strain society’s medical
Early screening of young adults for indicators of disordered eating offers the potential to provide early intervention when these behaviors are easiest to amend and treat. The matched case-control design used in this study identified characteristics associated with disturbed eating that differed between healthy young adults and those with a DRCHC and indicated that those with DRCHCs were significantly more likely to be categorized as “disturbed” eaters and were twice as likely to have been diagnosed with an eating disorder. Poor relationships with healthcare providers and decreased quality of life were associated with increased disturbed eating severity among those with DRCHCs. The 3 scales that predicted approximately half the variance in Disturbed Eating Severity can be used as an early indicator in clinical assessments in both healthy young adults and those with DRCHCs.

This study’s findings also can help guide future investigations seeking to determine how demographic and psychographic characteristics in the young adult population may manifest as disturbed eating and develop into eating disorders over time (i.e., longitudinal studies). In the meantime, it highlights the need for healthcare practitioners to become more cognizant of disturbed eating behaviors and eating disorder risk factors in the young adult and DRCHC population and be proactive in addressing these behaviors with their patients at regular check-ups. Reliable and valid screening tools easily scored with low participant need to be used regularly in clinical settings. At this time, disturbed eating screening is lacking in the standardized treatment of DRCHC youth; however it is hoped that the findings of this study will compel changes. Thus, recommendations for addressing these concerns are found below.
Recommendations

1. **Standardized Care of Healthy Youth.** Healthcare providers should routinely assess youth/young adults for disturbed eating behaviors by using appropriate screening assessment tools. The 13 questionnaire items identified in this study could be a good starting point. Preventive screening is essential in safeguarding the health of youth and may help prevent a minor disturbed eating behavior from progressing to a major co-morbidity that they can ill afford to have and that is difficult to treat.

2. **Development of Disease-Specific Eating Disorder Risk Assessments.** The development of disease-specific disturbed eating behavior risk assessments are needed. These assessments should be cognitively and formatively tested with disease-specific age groups and healthcare practitioner disease specialists. Input from all healthcare specialists (e.g., general physicians, endocrinologists, nurses, registered dietitians, gastroenterologists) during the development of these assessments is imperative because these expert professionals are a vital part in the treatment and care of patients with DRCHC. The assessments should be carefully developed to be sure they are accurately interpreted by various age groups; and quick and easy for the DRCHC population to complete and score for healthcare providers. The 13 questionnaire items identified in this study as predicting approximately half or more of the variance in disturbed eating severity can provide a useful starting point for this risk assessment.
3. **Standardized Care of Youth/Young Adults with DRCHCs.** Disturbed eating risk assessments should be a priority in the standardized treatment care plans for all DRCHC populations. This findings in this study indicate these individuals are at increased risk for disturbed eating and, potentially, eating disorders. To improve quality of life and medical outcomes of DRCHC populations it is important, from a prevention standpoint, to screen for disturbed eating behaviors that could escalate into eating disorders. Primary eating disorder prevention will benefit the health of DRCHC youth and decrease the risk for poor medical outcomes that can be costly to the healthcare system\textsuperscript{417}.

4. **Increase Awareness of Propensity for Disturbed Eating Behaviors in Youth with DRCHCs.** Awareness campaigns and interventions targeted to healthcare providers can build awareness of increased disturbed eating risk in youth diagnosed with DRCHCs and start the conversation for addressing these valid concerns. Collaboration with eating disorder prevention and awareness groups like the National Eating Disorders Awareness non-profit group\textsuperscript{418}, and various media outlets such as television, Internet, medical professional organizations, and research journals, are some avenues that can be taken to reach this audience.

**Recommendations for Future Research**

The results from this study provide hypothesis for the many research studies needed to increase understanding of disturbed eating behaviors and the risk they pose to
the health of young adults. Future studies should examine disturbed eating risk and associated eating disorder risk factors in a larger sample of youth with DRCHCs who are followed over time (prospectively), starting at or before time of diagnosis (when family history is strong) to get an overall picture of how disturbed eating behaviors unfold. It is also important to have a diverse sample of participants with various DRCHCs recruited from both the clinical and the general population. Investigation of psychographic and demographic differences among individuals with various types and severity of DRCHCs also should be investigated. Individuals with DRCHCs who engage in disturbed eating should be interviewed in depth about their motives for these behaviors. A better understanding of the motives for disturbed eating behaviors in individuals with and without DRCHCs, can inform the long term development of disordered eating prevention materials/programs and lead to more precise eating disorder screening assessments that healthcare professionals can routinely utilize with patients.

Furthermore, research studies that investigate the development and usefulness of disease-specific disturbed eating risk assessments that can easily be implemented in the healthcare settings should be conducted. Future interventions should provide training that enables healthcare providers to develop the skills and motivation required for the assessment of disturbed eating behaviors during regular clinical visits. Subsequent healthcare outcomes research should assess whether healthcare providers are screening for disordered eating in DRCHC patients\textsuperscript{365}. Appropriate training in counseling individuals who present with disturbed eating may be needed to help health professionals feel comfortable discussing this sensitive topic with patients\textsuperscript{365}. More importantly, more
research investigating the barriers between healthcare providers and young adults in screening for disturbed eating is warranted.

It is hoped that by sharing the findings and recommendations of this study with others, healthcare professionals will be motivated to screen for signs of disturbed eating behaviors in patients and refer them to interventions early--as soon as these behaviors are noted. In the long term, this practice could result in decreased rates of disturbed eating behaviors and fewer medical complications arising from disturbed eating and ultimately increase the quality of life overall.
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Appendix A

ABBREVIATIONS USED

ASI-R: Appearance Schema Inventory-Revised
BAI: Beck Anxiety Inventory
BDI: Beck Depression Inventory
BED: Binge Eating Disorder
BIQOL: Body Image Quality of Life
BMI: Body Mass Index
BSQ: Body Shape Questionnaire
CDC HRQOL-14: Center for Disease Control and Preventions Health-Related Quality of Life14-item instrument
CDQ: Celiac Disease Questionnaire
CF: Cystic Fibrosis
CFMQ: Childhood Family Mealtime Questionnaire
CFQL: Cystic Fibrosis Quality of Life
DEBQ: Dutch Eating Behavior Questionnaire
DQOL: Diabetes Quality of Life
DRCHCs: Diet-Related Chronic Health Conditions
DSM-IV: Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition
DTEDS: Dichotomous Thinking in Eating Disorders Scale
EAT: Eating Attitude Test
EBS: Eating Behavior Survey
EDNOS: Eating Disorders Not Otherwise Specified
EDE: Eating Disorder Examination
EDE-Q: Eating Disorder Examination Questionnaire
EDI: Eating Disorder Inventory
EI: Emotional Intelligence
EES: Emotional Eating Scale
FEBS: Follow-Up Eating Behavior Survey
FES: Family Environment Scale
FF: Family Functioning Questionnaire
FOCI: Florida Obsessive Compulsive Inventory
HBM: Health Belief Model
HLC: Health Locus of Control
IBD: Inflammatory Bowel Disease
IBQ: Illness Behavior Questionnaire
IBS-QOL: Irritable Bowel Syndrome- Quality of Life
ICD-10: International Statistical Classification of Diseases and Related Health Problems
IDED: Interview for Diagnosis of Eating Disorders-IV
MPS-F: Multidimensional Perfectionism Scale by Frost el al
NES: Night Eating Syndrome
OBCS: Objectified Body Consciousness Scale
OCD: Obsessive Compulsive Disorder
PHQ-8: Patient Health Questionnaire-8 items
POTS: Perception of Teasing Scale
QOL: Quality of Life
RDs: Registered Dietitians
RRS: Revised Restraint Scale
RSE: Rosenberg Self-Esteem Scale
SAS: Zung Self-Rating Anxiety Scale
SATAQ: Sociocultural Attitudes Towards Appearance Questionnaire
SCID-I: The Structured Clinical Interview for DSM-IV Axis I Disorders
SCL-90: Symptom Checklist-90 items
SCT: Social Cognitive Theory
SDS: Zung Self-Rating Depression Scale
SF-36: Medical Outcomes Study Short Form 36-item survey
SIAB-EX: Structured Interview for Anorexic and Bulimic Syndrome-Expert Review
SIBDQ: Short Inflammatory Bowel Disease Questionnaire
SISD: Short Index of Self-Directedness
SOC: Sense of Coherence
TCI: Temperament and Character Inventory
TFEQ: Three Factor Eating Questionnaire
TMSC: Transactional Model of Stress and Coping
WLEIS: Wong & Law Emotional Intelligence Scale
Appendix B

Recruitment Advertisements for Eating Behavior Survey & Follow-Up Surveys

Eating Behavior Survey Recruitment Ad:

Hey Young Adults!
Got 30 minutes to complete an online survey about your eating practices?
You could win one of 10 $25 prizes!
To learn more, go to http://nutrisci.rutgers.edu/eating.
Got Questions? Email foodstudy@aesop.rutgers.edu

Follow-up Survey Recruitment Email:

Dear Participant,

Thank you for completing an online survey recently. We would like to invite you to participate in another survey. If you have 20 minutes, please visit WEBSITE (link varied depending on participant’s health condition)
You could win 1 of 10 $25 prizes.
To learn more, go to WEBSITE (varies depending on participant’s health condition)
Got questions? Email foodstudy@aesop.rutgers.edu

Thanks!

Sincerely,
Virginia (Ginger) Quick, RD
Doctoral Candidate
Rutgers University
vquick@rci.rutgers.edu
CALLING
YOUNG
ADULTS!

DO YOU HAVE ONE OF THESE HEALTH
CONDITIONS?

- Type 1 Diabetes
- Celiac Disease
- Cystic Fibrosis
- Irritable Bowel Syndrome
- Crohns Disease
- Ulcerative Colitis

IF YES, please help researchers by completing a brief online eating behavior survey.

You could win
1 of 10 $25 prizes!
To learn more, go to http://nutrisci.rutgers.edu/eating
Appendix D
Eating Behavior Survey

Please select the answer that best describes you.

1. Sometimes when I start eating, I just can’t seem to stop.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

2. I am always hungry enough to eat at any time.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

3. When I feel lonely, I console myself by eating.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

4. I think of food as either “good” or “bad.”
   Definitely False
   Mostly False
   Mostly True
   Definitely True

5. I am always hungry, so it is hard for me to stop eating before I finish the food on my plate.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

6. Do you diet?
   Yes
   No, Skip to Question 10

7. I view my attempts to diet as either successes or failures.
   Definitely False
   Mostly False
   Mostly True
   Definitely True
8. When dieting, if I eat something that I had planned not to, I think that I have failed.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

9. When dieting, I view my eating as having been either good or bad.
   Definitely False
   Mostly False
   Mostly True
   Definitely True

10. When I feel blue, I often overeat.
    Definitely False
    Mostly False
    Mostly True
    Definitely True

11. When I feel anxious, I find myself eating.
    Definitely False
    Mostly False
    Mostly True
    Definitely True

12. How often do you feel hungry?
    Only at meal times
    Sometimes between meals
    Often between meals
    Almost always

13. I am able to control my temper and handle difficulties rationally.
    Strongly disagree
    Disagree
    Moderately disagree
    Neither agree nor disagree
    Moderately agree
    Agree
    Strongly agree

14. I am quite capable of controlling my own emotions.
    Strongly disagree
    Disagree
    Moderately disagree
    Neither agree nor disagree
    Moderately Agree
15. I can always calm down quickly when I am very angry.
   Strongly disagree
   Disagree
   Moderately disagree
   Neither agree nor disagree
   Moderately agree
   Agree
   Strongly agree

16. I have good control of my own emotions.
   Strongly disagree
   Disagree
   Moderately disagree
   Neither agree nor disagree
   Moderately Agree
   Agree
   Strongly agree

17. I've felt pressure from TV or magazines to have a perfect body.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

18. My health is the most important consideration in my life.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

19. At times, I think I am no good at all.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly Agree

20. I almost never take an illness I get seriously.
   Strongly disagree
   Disagree
   Neither agree nor disagree
21. When I see good-looking people, I wonder about how my own looks measure up.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

22. I only think about my health from time to time.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

23. When something makes me feel good or bad about my looks, I tend to dwell on it.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

24. I certainly feel useless at times.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

25. When I meet people for the first time, I wonder what they think about how I look.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

26. My appearance is responsible for much of what has happened to me in my life.
   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

27. Whenever I am ill, no matter how mild the symptom, I take it seriously.
   Strongly disagree
28. I often check my appearance in a mirror just to make sure I look okay. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

29. All in all, I am inclined to feel that I am a failure. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

30. What I look like is an important part of who I am. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

31. I compare my body to the bodies of people who are on TV and movie stars. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

32. I fantasize about what it would be like to be better looking than I am. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

33. I do not compare my body to the bodies of people who appear in magazines. **Strongly disagree**
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree
34. I've felt pressure from TV or magazines to lose weight.

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

35. By controlling my appearance, I can control many of the social and emotional events in my life.

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

36. Movies are an important source of information about fashion and "being attractive."

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

37. I've felt pressure from TV and magazines to be thin.

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

38. I try to be as physically attractive as I can be.

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

39. TV is an important source of information about fashion and "being attractive."

   Strongly disagree
   Disagree
   Neither agree nor disagree
   Agree
   Strongly agree

40. In my everyday life, lots of things happen that make me think about what I look like.

   Strongly disagree
   Disagree
Neither agree nor disagree
Agree
Strongly agree

41. Magazines are not an important source of information about fashion and "being attractive."
  Strongly disagree
  Disagree
  Neither agree nor disagree
  Agree
  Strongly agree

42. I take a positive attitude toward myself.
  Strongly Disagree
  Disagree
  Neither agree or disagree
  Agree
  Strongly Agree

43. I spend little time on my physical appearance.
  Strongly disagree
  Disagree
  Neither agree nor disagree
  Agree
  Strongly agree

44. If I like how I look on a given day, it’s easy to feel happy about other things.
  Strongly disagree
  Disagree
  Neither agree nor disagree
  Agree
  Strongly agree

45. Movie stars are not an important source of information about fashion and "being attractive."
  Strongly disagree
  Disagree
  Neither agree nor disagree
  Agree
  Strongly agree

HOW DO YOU HANDLE A STRESSFUL SITUATION?

46. When faced with a stressful situation, I determine a course of action and follow it.
  Not at all
  Slightly
47. When faced with a stressful situation, I work to understand the situation.
Not at all
Slightly
Somewhat
Moderately
Very much

48. When faced with a stressful situation, I think about the event and learn from my mistakes.
Not at all
Slightly
Somewhat
Moderately
Very much

49. When faced with a stressful situation, I blame myself for having gotten into the situation.
Not at all
Slightly
Somewhat
Moderately
Very much

50. When faced with a stressful situation, I blame myself for being too emotional about the situation.
Not at all
Slightly
Somewhat
Moderately
Very much

51. When faced with a stressful situation, I buy myself something.
Not at all
Slightly
Somewhat
Moderately
Very much

52. When faced with a stressful situation, I spend time with a special person.
Not at all
Slightly
Somewhat
53. When faced with a stressful situation, I blame myself for not knowing what to do.
   Not at all
   Slightly
   Somewhat
   Moderately
   Very much

HOW OFTEN DID THIS HAPPEN TO YOU BETWEEN THE AGES OF 5 AND 16 YEARS OLD?

54. When you were between the ages of 5 and 16, how often did people make fun of you because your weight?
   1 Never, Skip to Question 56
   2
   3 Sometimes
   4
   5 Very Often

55. How upset were you?
   1 Not Upset
   2
   3 Somewhat Upset
   4
   5 Very Upset

56. When you were between the ages of 5 and 16, how often did people call you names like “fatso”?
   1 Never, Skip to Question 58
   2
   3 Sometimes
   4
   5 Very Often

57. How upset were you.
   1 Not Upset
   2
   3 Somewhat Upset
   4
   5 Very Upset

58. When you were between the ages of 5 and 16, how often did people laugh at you because of your weight?
59. How upset were you?
   1 Not Upset
   2
   3 Somewhat Upset
   4
   5 Very Upset

THINK BACK TO FAMILY MEALTIMES WHEN YOU WERE YOUNG (UP TO THE AGE OF 13). PLEASE INDICATE HOW OFTEN YOU FELT LIKE THIS.

60. When I was young, I liked eating dinner with my family.
   Never
   Rarely
   Sometimes
   Usually
   Always

61. When I was young, I remember worrying about my weight.
   Never
   Rarely
   Sometimes
   Usually
   Always

62. When I was young, because of stress during meals, I liked to or wished I could eat alone.
   Never
   Rarely
   Sometimes
   Usually
   Always

63. When I was young, my mother dieted.
   Never
   Rarely
   Sometimes
   Usually
   Always

64. When I was young, at meals, I was told not to waste food.
65. When I was young, I remember feeling nervous during dinner.
   Never
   Rarely
   Sometimes
   Usually
   Always

66. When I was young, if I did not like what we were having for dinner, I had to eat it anyway.
   Never
   Rarely
   Sometimes
   Usually
   Always

67. When I was young, it was a relief when my father was not at dinner.
   Never
   Rarely
   Sometimes
   Usually
   Always

68. When I was young, I had to clean my plate (i.e., eat all the food on it) at home.
   Never
   Rarely
   Sometimes
   Usually
   Always

69. When I was young, I remember thinking about my weight.
   Never
   Rarely
   Sometimes
   Usually
   Always

70. When I was young, I felt able to speak my mind during mealtimes.
   Never
   Rarely
   Sometimes
71. When I was young, I was encouraged to diet.

Never
Rarely
Sometimes
Usually
Always

72. When I was young, my family thought of beauty as depending a lot on weight.

Never
Rarely
Sometimes
Usually
Always

73. When I was young, my mother worried about her weight.

Never
Rarely
Sometimes
Usually
Always

74. When I was young, my family talked about our own or each other’s weight.

Never
Rarely
Sometimes
Usually
Always

75. When I was young, my father commented about my mother’s weight when I was young.

Never
Rarely
Sometimes
Usually
Always

PLEASE ANSWER THE FOLLOWING QUESTIONS BELOW WITH HOW YOU FEEL NOW AT YOUR PRESENT AGE.

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

None
Up to a quarter
About half
More than half
Almost all

77. Other than only to use the bathroom, how often do you get up at least once in the middle of the night?
Never, skip to Question 80
Less than once a week
About once a week
More than once a week
Every night

78. Do you have cravings or urges to eat snacks when you wake up at night?
Not at all
A little
Somewhat
Very much so
Extremely so

79. Do you need to eat in order to get back to sleep when you awake at night?
Not at all
A little
Somewhat
Very much so
Extremely so

80. When you get up in the middle of the night, how often do you snack?
Never, Go to Question 83
Sometimes
About half the time
Usually
Always

81. How much control do you have over your eating while you are up at night?
None at all
A little
Somewhat
Very much
Complete

OVER THE LAST 14 DAYS, HOW OFTEN HAVE YOU BEEN BOTHERED BY ANY OF THESE?

82. During the past 2 weeks, I have had little interest or pleasure in doing things.
Not at all
Several days
More than half the days
Nearly every day

83. **During the past 2 weeks, I have felt down, depressed, hopeless.**
   Not at all
   Several days
   More than half the days
   Nearly every day

84. **During the past 2 weeks, I have trouble falling or staying asleep.**
   Not at all
   Several days
   More than half the days
   Nearly every day

85. **During the past 2 weeks, I have felt tired or had little energy.**
   Not at all
   Several days
   More than half the days
   Nearly every day

86. **During the past 2 weeks, I have had a poor appetite or have overeaten.**
   Not at all
   Several days
   More than half the days
   Nearly every day

87. **During the past 2 weeks, I have felt bad about myself—or that I am a failure and/or have let my family or myself down.**
   Not at all
   Several days
   More than half the days
   Nearly every day

88. **During the past 2 weeks, I have had trouble concentrating on things, such as reading the newspaper or watching television.**
   Not at all
   Several days
   More than half the days
   Nearly every day

89. **During the past 2 weeks, I have moved or spoken so slowly that other people could notice. Or the opposite—I have been so fidgety or restless that I have been moving around a lot more than usual.**
   Not at all
   Several days
More than half the days
Nearly every day

90. **During the past 2 weeks, how often have you felt nervous, anxious, or on edge?**
   Not at all
   Several days
   More than half the days
   Nearly every day

91. **During the past 2 weeks, how often have you not been able to stop worrying or control worrying?**
   Not at all
   Several days
   More than half the days
   Nearly every day

92. **During the past 2 weeks, how often have you worried too much about different things?**
   Not at all
   Several days
   More than half the days
   Nearly every day

93. **During the past 2 weeks, how often have you had trouble relaxing?**
   Not at all
   Several days
   More than half the days
   Nearly every day

94. **During the past 2 weeks, how often have you been so restless that it’s hard to sit still?**
   Not at all
   Several days
   More than half the days
   Nearly every day

95. **During the past 2 weeks, how often have you become easily annoyed or irritable?**
   Not at all
   Several days
   More than half the days
   Nearly every day

96. **During the past 2 weeks, how often have you felt afraid as if something awful might happen?**
   Not at all
Several days
More than half the days
Nearly every day

PLEASE ANSWER QUESTIONS BELOW BASED ON YOUR EXPERIENCES IN THE PAST MONTH.

97. During the past month, which of these thoughts or images has repeatedly entered your mind? (Check all that apply)
   Concerns with contamination (dirt, germs, chemicals, radiation) or acquiring a serious illness such as AIDS
   Over concern with keeping objects (clothing, tools, etc.) in perfect order or arranged exactly
   Images of death or other horrible events
   Personally unacceptable religious or sexual thoughts
   None of the above

98. During the past month, have you worried a lot about any of these things happening to you? (Check all that apply)
   Fire, burglary, or flooding of the house
   Accidentally hitting a pedestrian with your car or letting it roll down a hill
   Spreading an illness (like giving someone AIDS)
   Losing something valuable
   Harm coming to a loved one because you were not careful enough
   None of the above

99. During the past month, have you felt driven to perform any of these acts over and over again? (Check all that apply)
   Excessive or ritualized washing, cleaning, or grooming
   Checking light switches, water faucets, the stove, door locks, or the emergency brake
   Counting, arranging, evening-up behaviors (making sure socks are at the same height)
   Collecting useless objects or inspecting the garbage before it is thrown out
   Repeating routine actions (in/out of chair, going through doorway, relighting cigarette) a certain number of times or until it feels just right
   Needing to touch objects or people
   Unnecessary rereading or rewriting; reopening envelopes before they are mailed
   Examining your body for signs of illness
   Avoiding colors (like “red” means blood), numbers (like “13” is unlucky), or names (like those that start with “D” signify death) that are associated with dreaded events or unpleasant thoughts
   Needing to “confess” or repeatedly asking for reassurance that you said or did something correctly
   None of the above

100. Did you choose NONE OF THE ABOVE as your answer for questions 97, 98, and 99?
Yes, go to question 106
No

101. During the past month, about how much time *each day* is occupied by the thoughts or behaviors listed in Questions 97, 98 and/or 99?
   None
   Less than 1 hour
   1 to 3 hours
   3 to 8 hours
   More than 8 hours

102. During the past month, how much distress do the thoughts and behaviors in Questions 97, 98 and/or 99 cause you?
   No distress
   Mild distress
   Moderate distress
   Severe distress
   Extreme (disabling) distress

103. How much control do you have over the thoughts and behaviors in Questions 97, 98, and/or 99?
   No control
   Little control
   Moderate control
   Much control
   Complete control

104. How much do the thoughts and behaviors in Questions 97, 98, and/or 99 cause you to avoid doing anything, going anyplace, or being with anyone?
   No avoidance
   Occasional avoidance
   Moderate avoidance
   Frequent and extensive avoidance
   Extreme avoidance (house-bound)

105. How much do the thoughts and behaviors in Questions 97, 98, and/or 99 interfere with your school, work, social, or family life?
   No interference
   Slight interference
   Moderate interference
   Much interference
   Extreme interference (disabling)

ANSWER THESE QUESTIONS BELOW BASED ON YOUR EXPERIENCES IN THE PAST 28 DAYS.
106. **During the past 28 days**, how many days have you tried to influence your body shape or weight by deliberately limiting the amount of food you eat (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

107. **During the past 28 days**, how many days have you tried to influence your body shape or weight by going for long periods of time (8 waking hours or more) without eating anything at all?
   number of days (enter 0 to 28): ____________

108. **During the past 28 days**, how many days have you tried to influence your body shape or weight by not eating foods that you like (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

109. **During the past 28 days**, how many days have you tried to influence your body shape or weight by trying to follow definite rules regarding your eating (for example, a calorie limit), (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

110. **During the past 28 days**, how many days have you tried to influence your body shape or weight by having a definite desire to have an **empty** stomach with the aim of influencing your shape or weight?
   number of days (enter 0 to 28): ____________

111. **During the past 28 days**, how many days has thinking about food, eating or **calories** made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
   number of days (enter 0 to 28): ____________

112. **During the past 28 days**, how many days has thinking about your shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading?)
   number of days (enter 0 to 28)

113. **During the past 28 days**, how many days have you had a definite fear of losing control over eating?
   number of days (enter 0 to 28): ____________

114. **During the past 28 days**, how many days have you eaten in secret? **Do not count episodes of binge eating.** Binge eating means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.
   number of days (enter 0 to 28): ____________
115. **During the past 28 days**, how often have you had a definite desire to have a **totally flat stomach**?
number of days (enter 0 to 28): ___________

116. **During the past 28 days**, how often have you a definite fear that you might gain weight or become fat?
number of days (enter 0 to 28): ___________

117. **During the past 28 days**, how often have you felt fat?
number of days (enter 0 to 28): ___________

118. **During the past 28 days**, how often have you had a strong desire to lose weight?
number of days (enter 0 to 28): ___________

119. **During the past 28 days**, how concerned have you been about other people seeing you eat? *Do not count episodes of binge eating.*

   0 - Not at all  
   1  2 - Slightly  
   3  4 - Moderately  
   5  6 - A lot

120. **During the past 28 days**, has your **shape** influenced how you think about (judge) yourself as a person?

   0 - Not at all  
   1  2 - Slightly  
   3  4 - Moderately  
   5  6 - A lot

121. **During the past 28 days**, how dissatisfied have you been with your **shape**?

   0 - Not at all  
   1  2 - Slightly  
   3  4 - Moderately  
   5  6 - A lot

122. **During the past 28 days**, how uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing, or taking a
bath or shower? (only select 4, 5 or 6 if you have felt uncomfortable on some occasions)
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - Alot

123. During the past 28 days, how uncomfortable have you felt about others seeing your body; for example, in communal changing rooms, when swimming, or wearing tight clothes? (only select 4, 5 or 6 if you have felt uncomfortable on some occasions)
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - Alot

124. During the past 28 days, has your weight influenced how you think about (judge) yourself as a person?
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

125. During the past 28 days, how upset would you be if you had been asked to weigh yourself once a week (no more, or less, often) for the next 4 weeks?
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - Alot

126. During the past 28 days, how dissatisfied have you been with your weight?
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - Alot

127. During the past 28 days, what proportion of the times you have eaten did you feel guilty (felt that you’ve been bad) because of its effect on your shape or weight? Do not count episodes of binge eating.

- None of the times
- A few of the times
- Less than half
- Half of the times
- More than half
- Most of the time
- Every time

128. Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food given the circumstances? Specify number of times: ____________

129. Over the past 28 days, how many of these times that you ate what other people would regard as an unusually large amount of food given the circumstances, did you have a sense of having lost control over your eating (at the time you were eating)? Specify number of days: ____________

130. Over the past 28 days, how many days have such episodes occurred (i.e., you have eaten an unusually large amount of food given the circumstances and had a sense of loss of control at the time)? Specify number of times: ____________

131. Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight? Specify number of times: ____________

132. Over the past 28 days, how many times have you used medicine (e.g., laxatives, insulin) as a means of controlling your shape or weight? Specify number of times: ____________

133. Over the past 28 days, how many times have you exercised in a “driven” or “compulsive” way as a means of controlling your weight, shape or amount of fat, or to burn off calories? Specify number of times: ____________

134. During the past 28 days, how often have you avoided wearing clothes that make you particularly aware of the shape of your body?

- Never
- Rarely
- Sometimes
Often
Very often
Always

135. During the past 28 days, how often have you pinched areas of your body to see how much fat there is?
Never
Rarely
Sometimes
Often
Very often
Always

PLEASE TELL US ABOUT YOURSELF

136. Currently, do you follow any of these diets? (Check all that apply)
Diabetic diet
Vegetarian
Vegan
Gluten-free
Lactose-free
Peanut-free
Other, specify _______
I do not follow any special diet, Skip to Question 137

137. Was the diet(s) you checked in Question 135 prescribed by a doctor or other healthcare professional?
Yes
No

138. What is your gender?
Male, Skip to Question 143
Female

139. If female, how many years old were you when you had your first period?
years of age: ______

140. If female: Over the past 3 to 4 months, how many menstrual periods have you missed?
months: ______

141. During the last 3 to 4 months, how many months were you pregnant?
months: ______

142. During the last 3 to 4 months, how many months were you taking birth control pills?
months: ______
143. If male, how many years old were you when you noticed your voice starting to change? 
years of age: ______

144. What is your age? 
17 or younger
18
19
20
21
22
23
24
25
26
27
28
29
30
31 or older

145. What is your race? 
American Indian or Alaska Native
Asian
Black or African American
Native Hawaiian or other Pacific Islander
White
Other race, please specify________
Two or more races, please specify _______

146. Are you Hispanic or Latino? 
Yes
No

147. What year in college are you? 
Freshman
Sophomore
Junior
Senior
Graduate Student
Other, specify: ________

148. What is your major? 
____
149. What is your religion?
Protestant
Catholic
Jewish
Muslim
Buddhist
Hindu
Agnostic
None
Other, specify: __________

150. What is your height?
☐ less than 5 feet tall
☐ 5 feet 1 inch
☐ 5 feet 2 inch
☐ 5 feet 3 inch
☐ 5 feet 4 inch
☐ 5 feet 5 inch
☐ 5 feet 6 inch
☐ 5 feet 7 inch
☐ 5 feet 8 inch
☐ 5 feet 9 inch
☐ 5 feet 10 inch
☐ 5 feet 11 inch
☐ 6 feet 0 inch
☐ 6 feet 1 inch
☐ 6 feet 2 inch
☐ 6 feet 3 inch
☐ 6 feet 4 inch
☐ 6 feet 5 inch
☐ 6 feet 6 inch
☐ 6 feet 7 inch
☐ 6 feet 8 inch
☐ 6 feet 9 inch
☐ 6 feet 10 inch
☐ 6 feet 11 inch
☐ more than 7 feet tall

151. What is your weight in pounds?

152. How would you describe your weight when you were in 1st grade?
Very thin
Thin
Average
Slightly heavy
153. How would you describe your weight when you were in 6th grade?
- Very thin
- Thin
- Average
- Slightly heavy
- Overweight

154. How would you describe your weight in 10th grade?
- Very thin
- Thin
- Average
- Slightly heavy
- Overweight

155. How would you describe your weight now?
- Very thin
- Thin
- Average
- Slightly heavy
- Overweight

156. Has your weight remained stable over the past month? (Within 1 to 2 pounds of usual weight)
- Yes
- No
- Not sure

157. If you answered NO to Question 156, was this an intentional weight loss or gain?
- Yes
- No
- Not applicable

158. When you were growing up did your family usually have health insurance?
- Yes
- No
- Not sure

159. Do you have health insurance now?
- Yes
- No

160. Has a health professional, such as a doctor or psychologist, ever told you that you have any of these conditions? (Check all that apply)
Type 1 diabetes if so, what age were you? _____
Type 2 diabetes if so, what age were you? _____
Celiac disease if so, what age were you? _____
Chicken Pox if so, what age were you? _____
Cystic fibrosis if so, what age were you? _____
Measles if so, what age were you? _____
Crohn’s disease if so, what age were you? _____
Ulcerative colitis if so, what age were you? _____
Osteoporosis if so, what age were you? _____
Irritable bowel syndrome if so, what age were you? _____
Eating Disorder if so, what age were you? _____

161. Does anyone in your immediate family (birth mother, birth father, or siblings) have these medical conditions? *(Check all that apply)*
- Type 1 diabetes
- Type 2 diabetes
- Celiac disease
- Cystic fibrosis
- Crohn’s disease
- Ulcerative colitis
- Osteoporosis
- Irritable bowel syndrome
- Eating Disorder

162. My health is _____.
- Excellent
- Very good
- Good
- Fair
- Poor
- Don’t know/Not sure

163. Think about your physical health, which includes physical illness and injuries. How many days during the past 30 days has your physical health not been good?  
Number of days (indicate 0 to 30): _____
- Don’t know/Not sure

164. Think about your mental health, which includes stress, depression, and problems with emotions. How many days during the past 30 days has your mental health not been good?  
Number of days (indicate 0 to 30): _____
- Don’t know/Not sure

165. During the past 3 months or longer, have you had abdominal discomfort or pain that has been relieved by having a bowel movement?  
- Yes
- No
166. During the past 3 months or longer, have you had abdominal discomfort or pain that has led to changes in how often you have bowel movements?  
Yes  
No

167. During the past 3 months or longer, has the appearance of your bowel movements changed?  
Yes  
No

168. Please list the 2 TV programs you watch most frequently.  
1. ____________________  
2. ____________________

169. Please list the 2 magazines that you read most frequently.  
1. _____________  
2. _____________

170. Please list the 2 websites that you visit most frequently.  
1. ____________  
2. ____________

171. Name  
____________________________________

173. Phone with voice mail (so we can let you know if you won!)  
____________________________________

173. Email (so we can let you know if you won!)  
____________________________________

174. How did you learn about this survey? (If you heard about it from a professor, please give the professor’s name.)  
____________________________________

Thank you!
Appendix E
Follow-Up Survey’s

Group 1: Healthy Participants Follow-Up Survey

Thanks for agreeing to participate! This survey will take about 20 minutes to complete. Got questions? Email us at foodstudy@aesop.rutgers.edu

Recently you completed an online eating survey. In that survey you indicated that you do NOT have any of the following conditions: Type 1 Diabetes, Ulcerative Colitis, Crohn’s, Irritable Bowel Syndrome, Celiac disease, or Cystic Fibrosis. Do you have any of these health conditions?

Yes—end survey (thank you for participating!)
No—start survey

Please select the answer that best describes you.

1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
   Yes
   No

2. Are you more sensitive to pain than other people?
   Yes
   No

3. Are you afraid of illness?
   Yes
   No

4. Do you think that you worry about your health more than most people?
   Yes
   No

5. Do you find that you get jealous of other people’s good health?
   Yes
   No

6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
   Yes
   No

7. Do you often think that you might suddenly fall ill?
   Yes
8. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?
   Yes
   No

9. Do you think there is something seriously wrong with your body?
   Yes
   No

10. If the doctor told you that they could find nothing wrong with you, would you believe them?
    Yes
    No

11. Do you find that you are often aware of various things happening in your body?
    Yes
    No

12. Are you sleeping well?
    Yes
    No

13. Do you find that you are bothered by many different symptoms?
    Yes
    No

14. Do you think that your symptoms may be caused by worry?
    Yes
    No

15. Is your bad health the biggest difficulty of your life?
    Yes
    No

16. Do you think there is something the matter with your mind?
    Yes
    No

17. Are you bothered by many pains and aches?
    Yes
    No

18. Can you express your personal feelings easily to other people?
    Yes
19. When you are angry, do you tend to bottle up your feelings?
Yes
No

20. Do you prefer to keep your feeling to yourself?
Yes
No

21. Is it easy for you to let people know when you are cross with them?
Yes
No

22. Is it hard for you to show people your personal feelings?
Yes
No

23. Do you often find that you lose patience with other people?
Yes
No

24. Are you more irritable towards other people?
Yes
No

25. Do you find that you get angry easily?
Yes
No

26. Are you easy to get along with when you are feeling sick?
Yes
No

27. Are you always a cooperative patient?
Yes
No

When you are in a difficult or stressful situation, how do you usually respond?

28. I criticize myself.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
29. I give up the attempt to cope.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

30. I try to come up with a strategy about what to do.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

31. I think hard about what steps to take.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

32. I use alcohol or other drugs to make myself feel better.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

33. I take action to try to make the situation better.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

34. I get emotional support from others.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

35. I learn to live with it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

36. I make jokes about it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
I usually do this a lot

37. I express my negative feelings.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

38. I try to find comfort in my religion or spiritual beliefs.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

39. I refuse to believe that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

40. I accept the reality of the fact that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

41. I get comfort and understanding from someone.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

42. I give up trying to deal with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

43. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

44. I say to myself “this isn’t real.”
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

45. I pray or meditate.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

46. I say things to let my unpleasant feelings escape.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

47. I make fun of the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

48. I try to see it in a different light, to make it seem more positive.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

49. I use alcohol or other drugs to help me get through it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

50. I turn to work or other activities to take my mind off things.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

51. I look for something good in what is happening.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
52. I concentrate my efforts on doing something about the situation.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

53. I blame myself for things that happened.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

How certain are you that you can manage to stick to eating healthy foods?

54. I can manage to stick to eating healthy foods, even if I need a long time to develop
   the necessary routines.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

55. I can manage to stick to eating healthy foods, even if I have to try several times until
   it works.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

56. I can manage to stick to eating healthy foods, even if I have to rethink my entire way
   of eating.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

57. I can manage to stick to eating healthy foods, even if I do not receive a great deal of
   support from others when making my first attempts.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

58. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.
   Very uncertain
   Rather uncertain
Rather certain
Very certain

Please tell us about you.

59. When you were younger, between the ages of 8 to 16, about how often did you see a doctor, nurse, dietitian, or other healthcare professional?
Never, Skip to Question 64
About 1 time per week
About 1 time per month
About Every 3 months
About Every 6 month
About 1 time per year
Not sure/ can’t remember
Other (please specify: __________)

60. When you were younger, between the ages of 8 to 16, which of these healthcare professionals did you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Optometrist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

61. When you were younger, between the ages of 8 to 16, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

62. When you were younger, between the ages of 8 to 16, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

63. When you were younger, between the ages of 8 to 16, how satisfied were you with your treatment?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
   Dissatisfied
   Very dissatisfied
   Not sure/can’t remember

64. Currently, which of these healthcare professionals do you visit at least 2 times per year? *(Check all that apply)*
   General Physician
   Endocrinologist
   Nurse
   Registered Dietitian
   Psychologist
   Gastroenterologist
   Optometrist (Eye doctor)
   Podiatrist (Foot doctor)
   None of the above
   Other, Specify:
   Not sure/can’t remember

65. Currently, how would you describe your relationship with your healthcare team?
   Very good
   Good
   Okay
   Bad
   Very bad
   Not applicable

66. Currently, how would you describe your communication with your healthcare team?
   Very good
   Good
   Okay
   Bad
   Very bad
   Not applicable

67. Currently, how satisfied are you with your treatment now?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
Dissatisfied
Very dissatisfied
Not applicable

68. During the last year, about how often have you seen a doctor, nurse, dietitian, or other healthcare professional?
Never
About 1 time per week
About 1 time per month
About Every 3 months
About Every 6 month
About 1 time per year
Other (please specify: ________)

69. Have you ever seen a Registered Dietitian (someone who helped you plan a diet)?
Yes
No, Skip to Question 71
Not sure/can’t remember, Skip to Question 71

70. If YES to #69, in the last year, how often have you seen a Registered Dietitian?
Never
About Once a month
About 6 times per year
About 3 times per year
About 1 time per year
About every two years
Other (please specify: ________)

71. Has a healthcare professional ever given you information about eating disorders?
Yes
No, Skip to Question 73
Not sure/can’t remember, Skip to Question 73

72. If YES to #71, please check below all who gave you information about eating disorders. (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Optometrist (Eye doctor)
Podiatrist (Foot doctor)
Other, (please specify: ________)
Not sure/can’t remember
73. How knowledgeable are you about nutrition?
Very knowledgeable
Knowledgeable
Somewhat knowledgeable
Not knowledgeable
Not knowledgeable at all

74. How satisfied are you with your knowledge of nutrition?
Very satisfied
Satisfied
Neither satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

75. Name

76. Email (so we can contact you if you won!)

77. Phone with voice mail (so we can contact you if you won!)
Group 2: Type 1 Diabetes Follow-Up Survey

Thanks for agreeing to participate! This survey will take about 20 minutes to complete. Got questions? Email us at foodstudy@aesop.rutgers.edu

Recently you completed an online eating survey. In that survey you indicated that you have Type 1 Diabetes. Do you have Type 1 Diabetes?

Yes—start survey
No—end survey (thank you for participating!)

Please select the answer that best describes you.

1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
   Yes
   No

2. Are you more sensitive to pain than other people?
   Yes
   No

3. Are you afraid of illness?
   Yes
   No

4. Do you think that you worry about your health more than most people?
   Yes
   No

5. Do you find that you get jealous of other people’s good health?
   Yes
   No

6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
   Yes
   No

7. Are you upset by the way people react to your health condition?
   Yes
   No

8. Do you often think that you might suddenly fall ill?
   Yes
   No
9. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?
   Yes
   No

10. Do you think there is something seriously wrong with your body?
    Yes
    No

11. Does your health condition interfere with your life a great deal?
    Yes
    No

12. If the doctor told you that they could find nothing wrong with you, would you believe them?
    Yes
    No

13. Do you find that you are often aware of various things happening in your body?
    Yes
    No

14. Are you sleeping well?
    Yes
    No

15. Do you find that you are bothered by many different symptoms?
    Yes
    No

16. Do you think that your symptoms may be caused by worry?
    Yes
    No

17. Is your bad health the biggest difficulty of your life?
    Yes
    No

18. Do you think there is something the matter with your mind?
    Yes
    No

19. Are you bothered by many pains and aches?
    Yes
    No
20. Do you ever think of your current health condition as a punishment for something you have done wrong in the past?
   Yes
   No

21. Can you express your personal feelings easily to other people?
   Yes
   No

22. When you are angry, do you tend to bottle up your feelings?
   Yes
   No

23. Do you prefer to keep your feeling to yourself?
   Yes
   No

24. Is it easy for you to let people know when you are cross with them?
   Yes
   No

25. Is it hard for you to show people your personal feelings?
   Yes
   No

26. Do you often find that you lose patience with other people?
   Yes
   No

27. Are you more irritable towards other people?
   Yes
   No

28. Do you find that you get angry easily?
   Yes
   No

29. Are you easy to get along with when you are feeling sick?
   Yes
   No

30. Does your current health condition affect the way you get along with your family or friends a great deal?
   Yes
   No
31. If you feel ill or worried about your health condition, can you easily be cheered up by the doctor?
Yes
No

32. Does it upset you to talk to the doctor about your health condition?
Yes
No

33. Are you always a cooperative patient?
Yes
No

When you are in a difficult or stressful situation, how do you usually respond?

34. I criticize myself.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

35. I give up the attempt to cope.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

36. I try to come up with a strategy about what to do.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

37. I think hard about what steps to take.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

38. I use alcohol or other drugs to make myself feel better.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
39. I take action to try to make the situation better.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

40. I get emotional support from others.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

41. I learn to live with it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

42. I make jokes about it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

43. I express my negative feelings.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

44. I try to find comfort in my religion or spiritual beliefs.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

45. I refuse to believe that it has happened.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

46. I accept the reality of the fact that it has happened.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
I usually do this a lot

47. I get comfort and understanding from someone.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

48. I give up trying to deal with it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

49. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

50. I say to myself “this isn’t real.”
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

51. I pray or meditate.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

52. I say things to let my unpleasant feelings escape.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

53. I make fun of the situation.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

54. I try to see it in a different light, to make it seem more positive.
55. I use alcohol or other drugs to help me get through it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

56. I turn to work or other activities to take my mind off things.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

57. I look for something good in what is happening.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

58. I concentrate my efforts on doing something about the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

59. I blame myself for things that happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

How certain are you that you can manage to stick to eating healthy foods?

60. I can manage to stick to eating healthy foods, even if I need a long time to develop the necessary routines.
Very uncertain
Rather uncertain
Rather certain
Very certain

61. I can manage to stick to eating healthy foods, even if I have to try several times until it works.
62. I can manage to stick to eating healthy foods, even if I have to rethink my entire way of eating.

63. I can manage to stick to eating healthy foods, even if I do not receive a great deal of support from others when making my first attempts.

64. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.

Please read each question carefully and choose the answer that best describes how you have felt during the past few weeks.

65. During the past few weeks, how often has your diabetes made you feel depressed?
   All the time
   Often
   Sometimes
   Seldom
   Never

66. During the past few weeks, how often has your diabetes made you feel angry?
   All the time
   Often
   Sometimes
   Seldom
   Never

67. During the past few weeks, how often has your diabetes made you feel irritable?
   All the time
   Often
   Sometimes
Seldom
Never

68. During the past few weeks, how often has your diabetes made you feel anxious?
All the time
Often
Sometimes
Seldom
Never

69. During the past few weeks, how often has your diabetes made you feel frustrated?
All the time
Often
Sometimes
Seldom
Never

70. During the past few weeks, how often has your diabetes made you feel helpless?
All the time
Often
Sometimes
Seldom
Never

71. During the past few weeks, how often has your diabetes made you feel isolated?
All the time
Often
Sometimes
Seldom
Never

72. During the past few weeks, how often has your diabetes made you feel like you are losing control of your life?
All the time
Often
Sometimes
Seldom
Never

73. During the past few weeks, how often has your diabetes made you feel like your life revolves around your diabetes?
All the time
Often
Sometimes
Seldom
Never
74. During the past few weeks, how often has your diabetes made you feel like life is less enjoyable?
   All the time
   Often
   Sometimes
   Seldom
   Never

75. During the past few weeks, my diabetes affected the time I was able to spend doing light tasks like preparing a snack or walking around.
   All the time
   Often
   Sometimes
   Seldom
   Never

76. During the past few weeks, my diabetes affected the time I was able to spend doing vigorous activities like exercising or sports.
   All the time
   Often
   Sometimes
   Seldom
   Never

77. During the past few weeks, my diabetes has made me feel tired and sluggish.
   All the time
   Often
   Sometimes
   Seldom
   Never

78. During the past few weeks, my diabetes kept me from getting as much done as I would have liked.
   All the time
   Often
   Sometimes
   Seldom
   Never

79. During the past few weeks, my diabetes has caused me to feel physically ill.
   All the time
   Often
   Sometimes
   Seldom
   Never
80. During the past few weeks, my diabetes has prevented me from going places I wanted to go.
   All the time
   Often
   Sometimes
   Seldom
   Never

81. During the past few weeks, my diabetes has prevented me from doing things I wanted to do.
   All the time
   Often
   Sometimes
   Seldom
   Never

82. During the past few weeks, my diabetes caused me to miss work or school.
   All the time
   Often
   Sometimes
   Seldom
   Never

83. During the past few weeks, my diabetes has made me feel frustrated because I could not eat when I wanted.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

84. During the past few weeks, my diabetes has made me feel frustrated because I could not eat the kinds of foods I wanted.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

85. During the past few weeks, my diabetes has made me feel frustrated because I could not eat the amount of food I wanted.
   Strongly agree
   Agree
   Neither
   Disagree
Strongly disagree

86. During the past few weeks, my diabetes has made it difficult for me to keep my weight where I’d like it to be.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

87. During the past few weeks, my diabetes has limited what I can wear.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

88. During the past few weeks, I have been embarrassed by having to use insulin.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

89. During the past few weeks, I think I irritated others because of what I need to do to control my diabetes.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

90. During the past few weeks, my diabetes has interfered with me having satisfactory intimate relationships.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

91. I worry that my diabetes will limit my future career.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree
92. I worry that my diabetes will get worse.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

93. I worry my blood sugar will drop and cause me to pass out.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

94. I worry that my diabetes will shorten my life.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

95. I worry that because of my diabetes I will never be able to lead an independent life.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

96. I am concerned that my diabetes is stressful for those who are close to me.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

97. I often eat something I shouldn’t rather than tell people I have diabetes.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

98. My diabetes has made it difficult for me to be around people I do not know well.
   Strongly agree
   Agree
Neither
Disagree
Strongly disagree

99. I find that my friends don’t always understand the limits that my diabetes places on me.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

Please tell us about you.

100. At what age were you first diagnosed with Type 1 diabetes?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older

101. Have you had any serious medical complications with Type 1 diabetes after being diagnosed?
Yes
No, Skip to Question 104
102. If YES to #101, at what age did you have your last serious medical complication caused by Type 1 diabetes?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older

103. What was the medical complication? (Briefly describe below)

104. When did you last have your Hemoglobin A1C checked?
Month and Year of last Hemoglobin A1C: ________
Never
Don’t remember/Unsure

105. What was your Hemoglobin A1C level at this check-up?
Less than 5.0%
Between 5.0-6.0%
Between 6.1-7.0%
Between 7.1-8.0%
Between 8.1-9.0%
Between 9.1-10%
Greater than 10.1%
Don’t know/Unsure
Not applicable
106. When you were first diagnosed with Type 1 diabetes, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your condition?
- Never
- About 1 time per week
- About 1 time per month
- About Every 3 months
- About Every 6 month
- About 1 time per year
- Not sure/ can’t remember
- Other (please specify:_________)

107. When first diagnosed with Type 1 diabetes, which of these healthcare professionals did you visit at least 2 times per year? (Check all that apply)
- General Physician
- Endocrinologist
- Nurse
- Registered Dietitian
- Psychologist
- Gastroenterologist
- Ophthalmologist (Eye doctor)
- Podiatrist (Foot doctor)
- None of the above
- Other, Specify:
- Not sure/can’t remember

108. When you were first diagnosed with Type 1 diabetes, how would you describe your relationship with your healthcare team?
- Very good
- Good
- Okay
- Bad
- Very bad
- Not sure/can’t remember

109. When first diagnosed with Type 1 diabetes, how would you describe your communication with your healthcare team?
- Very good
- Good
- Okay
- Bad
- Very bad
- Not sure/can’t remember

110. When first diagnosed with Type 1 diabetes, how often did the cost of medicine keep you from following your healthcare team’s advice?
- All the time
111. When first diagnosed with Type 1 diabetes, how often did the cost of specialized food keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never
Not sure/can’t remember

112. When first diagnosed with Type 1 diabetes, how satisfied were you with your diabetes treatment?
Very satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisfied
Very dissatisfied
Not sure/can’t remember

113. Currently, which of these healthcare professionals do you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

114. Currently, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable
115. Currently, how would you describe your communication with your healthcare team?  
Very good  
Good  
Okay  
Bad  
Very bad  
Not applicable

116. Currently, how often does the cost of medicine keep you from following your healthcare team’s advice?  
All the time  
Often  
Sometimes  
Seldom  
Never

117. Currently, how often does the cost of specialized food keep you from following your healthcare team’s advice?  
All the time  
Often  
Sometimes  
Seldom  
Never

118. Currently, how satisfied are you with your diabetes treatment?  
Very satisfied  
Satisfied  
Neither Satisfied nor Dissatisfied  
Dissatisfied  
Very dissatisfied

119. Do you follow a diabetic diet?  
Yes  
No, Skip to Question 121  
Choose not to answer, Skip to Question 121

120. If YES to #119, how closely are you able to follow the diabetic diet?  
Very closely  
Closely  
Somewhat closely  
Not closely  
Not closely at all

121. During the last year, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your diabetes?
Never
About 1 time per week
About 1 time per month
About Every 3 months
About Every 6 month
About 1 time per year
Other (please specify:_________)

122. Have you ever seen a Registered Dietitian (someone who helped you plan a diet to manage your diabetes)?
Yes
No, Skip to Question 124
Not sure/ can’t remember, Skip to Question 124

123. If YES to #122, in the last year, how often have you seen a Registered Dietitian?
Never
About Once a month
About 6 times per year
About 3 times per year
About 1 time per year
About Every two years
Other (please specify:_________)

124. Has a healthcare professional ever given you information about eating disorders?
Yes
No, Skip to Question 126
Not sure/can’t remember, Skip to Question 126

125. If YES to #124, please check below all who gave you information about eating disorders after you were diagnosed with your diabetes. (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
Other, specify ________
Not sure/can’t remember

126. How knowledgeable are you about Type 1 diabetes?
Very knowledgeable
Knowledgeable
Somewhat knowledgeable
Not knowledgeable
Not knowledgeable at all

127. How satisfied are you with your knowledge of Type 1 diabetes?
   Very satisfied
   Satisfied
   Neither satisfied nor dissatisfied
   Dissatisfied
   Very dissatisfied

128. Name

129. Email (so we can contact you if you won!)

130. Phone with voice mail (so we can contact you if you won!)
Group 3: Cystic Fibrosis Follow-Up Survey

Thanks for agreeing to participate! This survey will take about 20 minutes to complete. Got questions? Email us at foodstudy@aesop.rutgers.edu

Recently you completed an online eating survey. In that survey you indicated that you have Cystic Fibrosis. Do you have Cystic Fibrosis?

Yes—start survey
No—end survey (thank you for participating!)

Please select the answer that best describes you.

1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
   Yes
   No

2. Are you more sensitive to pain than other people?
   Yes
   No

3. Are you afraid of illness?
   Yes
   No

4. Do you think that you worry about your health more than most people?
   Yes
   No

5. Do you find that you get jealous of other people’s good health?
   Yes
   No

6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
   Yes
   No

7. Are you upset by the way people react to your health condition?
   Yes
   No

8. Do you often think that you might suddenly fall ill?
   Yes
   No
9. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?
   Yes
   No

10. Do you think there is something seriously wrong with your body?
    Yes
    No

11. Does your health condition interfere with your life a great deal?
    Yes
    No

12. If the doctor told you that they could find nothing wrong with you, would you believe them?
    Yes
    No

13. Do you find that you are often aware of various things happening in your body?
    Yes
    No

14. Are you sleeping well?
    Yes
    No

15. Do you find that you are bothered by many different symptoms?
    Yes
    No

16. Do you think that your symptoms may be caused by worry?
    Yes
    No

17. Is your bad health the biggest difficulty of your life?
    Yes
    No

18. Do you think there is something the matter with your mind?
    Yes
    No

19. Are you bothered by many pains and aches?
    Yes
    No
20. Do you ever think of your current health condition as a punishment for something you have done wrong in the past?
   Yes
   No

21. Can you express your personal feelings easily to other people?
   Yes
   No

22. When you are angry, do you tend to bottle up your feelings?
   Yes
   No

23. Do you prefer to keep your feeling to yourself?
   Yes
   No

24. Is it easy for you to let people know when you are cross with them?
   Yes
   No

25. Is it hard for you to show people your personal feelings?
   Yes
   No

26. Do you often find that you lose patience with other people?
   Yes
   No

27. Are you more irritable towards other people?
   Yes
   No

28. Do you find that you get angry easily?
   Yes
   No

29. Are you easy to get along with when you are feeling sick?
   Yes
   No

30. Does your current health condition affect the way you get along with your family or friends a great deal?
   Yes
   No
31. If you feel ill or worried about your health condition, can you easily be cheered up by the doctor?
Yes
No

32. Does it upset you to talk to the doctor about your health condition?
Yes
No

33. Are you always a cooperative patient?
Yes
No

When you are in a difficult or stressful situation, how do you usually respond?

34. I criticize myself.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

35. I give up the attempt to cope.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

36. I try to come up with a strategy about what to do.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

37. I think hard about what steps to take.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

38. I use alcohol or other drugs to make myself feel better.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
39. I take action to try to make the situation better.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

40. I get emotional support from others.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

41. I learn to live with it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

42. I make jokes about it.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

43. I express my negative feelings.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

44. I try to find comfort in my religion or spiritual beliefs.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

45. I refuse to believe that it has happened.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

46. I accept the reality of the fact that it has happened.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
I usually do this a lot

47. I get comfort and understanding from someone.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

48. I give up trying to deal with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

49. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

50. I say to myself “this isn’t real.”
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

51. I pray or meditate.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

52. I say things to let my unpleasant feelings escape.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

53. I make fun of the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

54. I try to see it in a different light, to make it seem more positive.
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

55. I use alcohol or other drugs to help me get through it.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

56. I turn to work or other activities to take my mind off things.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

57. I look for something good in what is happening.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

58. I concentrate my efforts on doing something about the situation.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

59. I blame myself for things that happened.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

How certain are you that you can manage to stick to eating healthy foods?

60. I can manage to stick to eating healthy foods, even if I need a long time to develop the necessary routines.  
Very uncertain  
Rather uncertain  
Rather certain  
Very certain

61. I can manage to stick to eating healthy foods, even if I have to try several times until it works.
Very uncertain
Rather uncertain
Rather certain
Very certain

62. I can manage to stick to eating healthy foods, even if I have to rethink my entire way of eating.
Very uncertain
Rather uncertain
Rather certain
Very certain

63. I can manage to stick to eating healthy foods, even if I do not receive a great deal of support from others when making my first attempts.
Very uncertain
Rather uncertain
Rather certain
Very certain

64. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.
Very uncertain
Rather uncertain
Rather certain
Very certain

Please read each question carefully and choose the answer that best describes how your Cystic Fibrosis has made you feel during the past few weeks.

65. During the past few weeks, how often has your cystic fibrosis made you feel depressed?
All the time
Often
Sometimes
Seldom
Never

66. During the past few weeks, how often has your cystic fibrosis made you feel angry?
All the time
Often
Sometimes
Seldom
Never

67. During the past few weeks, how often has your cystic fibrosis made you feel irritable?
All the time
Often
68. During the past few weeks, how often has your cystic fibrosis made you feel anxious?
   All the time
   Often
   Sometimes
   Seldom
   Never

69. During the past few weeks, how often has your cystic fibrosis made you feel frustrated?
   All the time
   Often
   Sometimes
   Seldom
   Never

70. During the past few weeks, how often has your cystic fibrosis made you feel helpless?
   All the time
   Often
   Sometimes
   Seldom
   Never

71. During the past few weeks, how often has your cystic fibrosis made you feel isolated?
   All the time
   Often
   Sometimes
   Seldom
   Never

72. During the past few weeks, how often has your cystic fibrosis made you feel like you are losing control of your life?
   All the time
   Often
   Sometimes
   Seldom
   Never

73. During the past few weeks, how often has your cystic fibrosis made you feel like your life revolves around your cystic fibrosis?
   All the time
   Often
Sometimes
Seldom
Never

74. During the past few weeks, how often has your cystic fibrosis made you feel like life is less enjoyable?
All the time
Often
Sometimes
Seldom
Never

75. During the past few weeks, my cystic fibrosis negatively affected the time I was able to spend doing light tasks like preparing a snack or walking around.
All the time
Often
Sometimes
Seldom
Never

76. During the past few weeks, my cystic fibrosis negatively affected the time I was able to spend doing vigorous activities like exercising or sports.
All the time
Often
Sometimes
Seldom
Never

77. During the past few weeks, my cystic fibrosis has made me feel tired and sluggish.
All the time
Often
Sometimes
Seldom
Never

78. During the past few weeks, my cystic fibrosis kept me from getting as much done as I would have liked.
All the time
Often
Sometimes
Seldom
Never

79. During the past few weeks, my cystic fibrosis has caused me to feel physically ill.
All the time
Often
Sometimes
Seldom
Never

80. During the past few weeks, my cystic fibrosis has prevented me from going places I wanted to go.
All the time
Often
Sometimes
Seldom
Never

81. During the past few weeks, my cystic fibrosis has prevented me from doing things I wanted to do.
All the time
Often
Sometimes
Seldom
Never

82. During the past few weeks, my cystic fibrosis caused me to miss work or school.
All the time
Often
Sometimes
Seldom
Never

83. During the past few weeks, my cystic fibrosis has made me feel frustrated because I could not eat when I wanted.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

84. During the past few weeks, my cystic fibrosis has made me feel frustrated because I could not eat the kinds of foods I wanted.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

85. During the past few weeks, my cystic fibrosis has made me feel frustrated because I could not eat the amount of food I wanted.
Strongly agree
86. During the past few weeks, my cystic fibrosis has made it difficult for me to keep my weight where I’d like it to be.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

87. During the past few weeks, my cystic fibrosis has limited what I can wear.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

88. During the past few weeks, I have been embarrassed by my coughing or breathlessness.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

89. During the past few weeks, I think I irritated others because of what I need to do to control my cystic fibrosis.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

90. During the past few weeks, my cystic fibrosis has interfered with me having satisfactory intimate relationships.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

91. I worry that my cystic fibrosis will limit my future career.
Strongly agree
92. I worry that my cystic fibrosis will get worse.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

93. I worry that I will need a heart-lung transplant.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

94. I worry that my cystic fibrosis will shorten my life.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

95. I worry that because of my cystic fibrosis I will never be able to lead an independent life.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

96. I am concerned that my cystic fibrosis is stressful for those who are close to me.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

97. I often eat something I shouldn’t rather than tell people I have cystic fibrosis.
   Strongly agree
   Agree
   Neither
   Disagree
Strongly disagree

98. My cystic fibrosis has made it difficult for me to be around people I do not know well.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

99. I find that my friends don’t always understand the limits that my cystic fibrosis places on me.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

Please tell us about you.

100. At what age were you first diagnosed with cystic fibrosis?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older
101. Have you had any serious medical complications with cystic fibrosis after being diagnosed?  
Yes  
No, Skip to Question 104

102. If YES to #101, at what age did you have your last serious medical complication caused by your cystic fibrosis?  
1 year or less  
2 years  
3 years  
4 years  
5 years  
6 years  
7 years  
8 years  
9 years  
10 years  
11 years  
12 years  
13 years  
14 years  
15 years  
16 years  
17 years  
18 years  
19 years  
20 years  
21 years  
22 years  
23 years  
24 years  
25 years or older

103. What was the medical complication? (Briefly describe below)

104. When you were first diagnosed with cystic fibrosis, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your condition?  
Never  
About 1 time per week  
About 1 time per month  
About Every 3 months  
About Every 6 month  
About 1 time per year  
Not sure/can’t remember  
Other (please specify:_________
105. When first diagnosed with cystic fibrosis, which of these healthcare professionals did you visit at least 2 times per year? *(Check all that apply)*
- General Physician
- Endocrinologist
- Nurse
- Registered Dietitian
- Psychologist
- Gastroenterologist
- Ophthalmologist (Eye doctor)
- Podiatrist (Foot doctor)
- None of the above
- Other, Specify:
- Not sure/can’t remember

106. When you were first diagnosed with cystic fibrosis, how would you describe your relationship with your healthcare team?
- Very good
- Good
- Okay
- Bad
- Very bad
- Not sure/can’t remember

107. When first diagnosed with cystic fibrosis, how would you describe your communication with your healthcare team?
- Very good
- Good
- Okay
- Bad
- Very bad
- Not sure/can’t remember

108. When first diagnosed with cystic fibrosis, how often did the cost of medicine keep you from following your healthcare team’s advice?
- All the time
- Often
- Sometimes
- Seldom
- Never
- Not sure/can’t remember

109. When first diagnosed with cystic fibrosis, how often did the cost of specialized food keep you from following your healthcare team’s advice?
- All the time
- Often
- Sometimes
Seldom
Never
Not sure/can’t remember

110. When first diagnosed with cystic fibrosis, how satisfied were you with your cystic fibrosis treatment?
Very satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisfied
Very dissatisfied
Not sure/can’t remember

111. Currently, which of these healthcare professionals do you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

112. Currently, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

113. Currently, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

114. Currently, how often does the cost of medicine keep you from following your healthcare team’s advice?
115. Currently, how often does the cost of specialized food keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

116. Currently, how satisfied are you with your cystic fibrosis treatment?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
   Dissatisfied
   Very dissatisfied

117. Do you follow a special diet for your cystic fibrosis?
   Yes
   No, Skip to Question 119
   Choose not to answer, Skip to Question 119

118. If YES to #117, how closely do you follow the diet for your cystic fibrosis?
   Very closely
   Closely
   Somewhat closely
   Not closely
   Not closely at all

119. During the last year, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your cystic fibrosis?
   Never
   About 1 time per week
   About 1 time per month
   About Every 3 months
   About Every 6 month
   About 1 time per year
   Other (please specify: __________)

120. Have you ever seen a Registered Dietitian (someone who helped you plan a diet to manage your cystic fibrosis)?
   Yes
   No, Skip to Question 122
Not sure/ can’t remember, Skip to Question 122

121. If YES to #120, in the last year, how often have you seen a Registered Dietitian?
   Never
   About Once a month
   About 6 times per year
   About 3 times per year
   About 1 time per year
   About Every other year
   Other (please specify: __________)

122. Has a healthcare professional ever given you information about eating disorders?
   Yes
   No, Skip to Question 124
   Not sure/I don’t remember, Skip to Question 124

123. If YES to #122, please check below all who gave you information about eating disorders after you were diagnosed with cystic fibrosis. (Check all that apply)
   General Physician
   Endocrinologist
   Nurse
   Registered Dietitian
   Psychologist
   Gastroenterologist
   Ophthalmologist (Eye doctor)
   Podiatrist (Foot doctor)
   Other, specify __________
   Not sure/can’t remember

124. How knowledgeable are you about cystic fibrosis?
   Very knowledgeable
   Knowledgeable
   Somewhat knowledgeable
   Not knowledgeable
   Not knowledgeable at all

125. How satisfied are you with your knowledge of cystic fibrosis?
   Very satisfied
   Satisfied
   Neither satisfied nor dissatisfied
   Dissatisfied
   Very dissatisfied

126. Name

127. Email (so we can contact you if you won!)
128. Phone with voice mail (so we can contact you if you won!)
Group 4: IBS&IBD Follow-Up Survey

Thanks for agreeing to participate! This survey will take about 20 minutes to complete. Got questions? Email us at foodstudy@aesop.rutgers.edu

Recently you completed an online eating survey. In that survey you indicated that you have a bowel problem such as, Irritable Bowel Syndrome, Ulcerative Colitis or Crohn’s disease. Do you have a bowel problem?

Yes—start survey
No—end survey (thank you for participating!)

Please select the answer that best describes you.

1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
   Yes
   No

2. Are you more sensitive to pain than other people?
   Yes
   No

3. Are you afraid of illness?
   Yes
   No

4. Do you think that you worry about your health more than most people?
   Yes
   No

5. Do you find that you get jealous of other people’s good health?
   Yes
   No

6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
   Yes
   No

7. Are you upset by the way people react to your health condition?
   Yes
   No

8. Do you often think that you might suddenly fall ill?
   Yes
No

9. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?
   Yes
   No

10. Do you think there is something seriously wrong with your body?
    Yes
    No

11. Does your health condition interfere with your life a great deal?
    Yes
    No

12. If the doctor told you that they could find nothing wrong with you, would you believe them?
    Yes
    No

13. Do you find that you are often aware of various things happening in your body?
    Yes
    No

14. Are you sleeping well?
    Yes
    No

15. Do you find that you are bothered by many different symptoms?
    Yes
    No

16. Do you think that your symptoms may be caused by worry?
    Yes
    No

17. Is your bad health the biggest difficulty of your life?
    Yes
    No

18. Do you think there is something the matter with your mind?
    Yes
    No

19. Are you bothered by many pains and aches?
    Yes
20. Do you ever think of your current health condition as a punishment for something you have done wrong in the past?
Yes
No

21. Can you express your personal feelings easily to other people?
Yes
No

22. When you are angry, do you tend to bottle up your feelings?
Yes
No

23. Do you prefer to keep your feeling to yourself?
Yes
No

24. Is it easy for you to let people know when you are cross with them?
Yes
No

25. Is it hard for you to show people your personal feelings?
Yes
No

26. Do you often find that you lose patience with other people?
Yes
No

27. Are you more irritable towards other people?
Yes
No

28. Do you find that you get angry easily?
Yes
No

29. Are you easy to get along with when you are feeling sick?
Yes
No

30. Does your current health condition affect the way you get along with your family or friends a great deal?
Yes
31. If you feel ill or worried about your health condition, can you easily be cheered up by the doctor?
   Yes
   No

32. Does it upset you to talk to the doctor about your health condition?
   Yes
   No

33. Are you always a cooperative patient?
   Yes
   No

When you are in a difficult or stressful situation, how do you usually respond?

34. I criticize myself.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

35. I give up the attempt to cope.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

36. I try to come up with a strategy about what to do.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

37. I think hard about what steps to take.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot

38. I use alcohol or other drugs to make myself feel better.
   I usually don’t do this at all
   I usually do this a little bit
   I usually do this a medium amount
   I usually do this a lot
39. I take action to try to make the situation better.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

40. I get emotional support from others.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

41. I learn to live with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

42. I make jokes about it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

43. I express my negative feelings.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

44. I try to find comfort in my religion or spiritual beliefs.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

45. I refuse to believe that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

46. I accept the reality of the fact that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

47. I get comfort and understanding from someone.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

48. I give up trying to deal with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

49. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

50. I say to myself “this isn’t real.”
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

51. I pray or meditate.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

52. I say things to let my unpleasant feelings escape.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

53. I make fun of the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
54. I try to see it in a different light, to make it seem more positive.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

55. I use alcohol or other drugs to help me get through it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

56. I turn to work or other activities to take my mind off things.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

57. I look for something good in what is happening.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

58. I concentrate my efforts on doing something about the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

59. I blame myself for things that happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

How certain are you that you can manage to stick to eating healthy foods?

60. I can manage to stick to eating healthy foods, even if I need a long time to develop the necessary routines.
Very uncertain
Rather uncertain
Rather certain
Very certain
61. I can manage to stick to eating healthy foods, even if I have to try several times until it works.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

62. I can manage to stick to eating healthy foods, even if I have to rethink my entire way of eating.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

63. I can manage to stick to eating healthy foods, even if I do not receive a great deal of support from others when making my first attempts.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

64. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

Please read each question carefully and choose the answer that best describes how your Bowel Problems have made you feel during the past few weeks.

65. During the past few weeks, how often has your bowel problem made you feel depressed?
   All the time
   Often
   Sometimes
   Seldom
   Never

66. During the past few weeks, how often has your bowel problem made you feel angry?
   All the time
   Often
   Sometimes
   Seldom
   Never
67. During the past few weeks, how often has your bowel problem made you feel irritable?
   All the time
   Often
   Sometimes
   Seldom
   Never

68. During the past few weeks, how often has your bowel problem made you feel anxious?
   All the time
   Often
   Sometimes
   Seldom
   Never

69. During the past few weeks, how often has your bowel problem made you feel frustrated?
   All the time
   Often
   Sometimes
   Seldom
   Never

70. During the past few weeks, how often has your bowel problem made you feel helpless?
   All the time
   Often
   Sometimes
   Seldom
   Never

71. During the past few weeks, how often has your bowel problem made you feel isolated?
   All the time
   Often
   Sometimes
   Seldom
   Never

72. During the past few weeks, how often has your bowel problem made you feel like you are losing control of your life?
   All the time
   Often
   Sometimes
   Seldom
73. During the past few weeks, how often has your bowel problem made you feel like your life revolves around your bowel problem?
All the time
Often
Sometimes
Seldom
Never

74. During the past few weeks, how often has your bowel problem made you feel like life is less enjoyable?
All the time
Often
Sometimes
Seldom
Never

75. During the past few weeks, my bowel problem affected the time I was able to spend doing light tasks like preparing a snack or walking around.
All the time
Often
Sometimes
Seldom
Never

76. During the past few weeks, my bowel problem affected the time I was able to spend doing vigorous activities like exercising or sports.
All the time
Often
Sometimes
Seldom
Never

77. During the past few weeks, my bowel problem has made me feel tired and sluggish.
All the time
Often
Sometimes
Seldom
Never

78. During the past few weeks, my bowel problem kept me from getting as much done as I would have liked.
All the time
Often
Sometimes
79. During the past few weeks, my bowel problem has caused me to feel physically ill.
   All the time
   Often
   Sometimes
   Seldom
   Never

80. During the past few weeks, my bowel problem has prevented me from going places I
   wanted to go.
   All the time
   Often
   Sometimes
   Seldom
   Never

81. During the past few weeks, my bowel problem has prevented me from doing things I
   wanted to do.
   All the time
   Often
   Sometimes
   Seldom
   Never

82. During the past few weeks, my bowel problem caused me to miss work or school.
   All the time
   Often
   Sometimes
   Seldom
   Never

83. During the past few weeks, my bowel problem has made me feel frustrated because I
   could not eat when I wanted.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

84. During the past few weeks, my bowel problem has made me feel frustrated because I
   could not eat the kinds of foods I wanted.
   Strongly agree
   Agree
   Neither
Disagree
Strongly disagree

85. During the past few weeks, my bowel problem has made me feel frustrated because I could not eat the amount of food I wanted.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

86. During the past few weeks, my bowel problem has made it difficult for me to keep my weight where I’d like it to be.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

87. During the past few weeks, my bowel problem has limited what I can wear.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

88. During the past few weeks, I have been embarrassed by needing to be near a bathroom or the smell caused by my bowel problem.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

89. During the past few weeks, I think I irritated others because of what I need to do to control my bowel problem.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

90. During the past few weeks, my bowel problem has interfered with me having satisfactory intimate relationships.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

91. I worry that my bowel problem will limit my future career.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

92. I worry that my bowel problem will get worse.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

93. I worry about losing control of my bowels.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

94. I worry that my bowel problem will shorten my life.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

95. I worry that because of my bowel problem I will never be able to lead an independent life.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

96. I am concerned that my bowel problems are stressful for those who are close to me.
Strongly agree
Agree
Neither
Disagree
Strongly disagree
97. I often eat something I shouldn’t rather than tell people I have bowel problem.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

98. My bowel problem has made it difficult for me to be around people I do not know well.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

99. I find that my friends don’t always understand the limits that my bowel problem places on me.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

Please tell us about you.

100. At what age were you first diagnosed with your bowel problem?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older

101. Have you had any serious medical complications with your bowel problem after being diagnosed?
Yes
No, Skip to Question 104

102. If YES to #101, at what age did you have your last serious medical complication that was caused by your bowel problem?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older

103. What was the medical complication? (Briefly describe below)

104. When you were first diagnosed with your bowel problem, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your condition?
Never
About 1 time per week
About 1 time per month
About Every 3 months
About Every 6 month
About 1 time per year
Not sure/ can’t remember
Other (please specify:_________)

105. When first diagnosed with your bowel problem, which of these healthcare professionals did you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

106. When you were first diagnosed with your bowel problem, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

107. When first diagnosed with your bowel problem, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

108. When first diagnosed with your bowel problem, how often did the cost of medicine keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never
Not sure/can’t remember
109. When first diagnosed with your bowel problem, how often did the cost of specialized food keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never
Not sure/can’t remember

110. When first diagnosed with your bowel problem, how satisfied were you with your bowel treatment?
Very satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisfied
Very dissatisfied
Not sure/can’t remember

111. Currently, which of these healthcare professionals do you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

112. Currently, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

113. Currently, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

114. Currently, often does the cost of medicine keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

115. Currently, often does the cost of specialized food keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

116. Currently, how satisfied are you with your bowel treatment?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
   Dissatisfied
   Very dissatisfied

117. Do you follow a special diet for your bowel problem?
   Yes
   No, Skip to Question 119
   Choose not to answer, Skip to Question 119

118. If YES to #117, how closely are you able to follow the diet for your bowel problem?
   Very closely
   Closely
   Somewhat closely
   Not closely
   Not closely at all

119. During the last year, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your bowel problem?
   Never
   About 1 time per week
   About 1 time per month
   About Every 3 months
   About Every 6 month
120. Have you ever seen a Registered Dietitian (someone who helped you plan a diet to manage your bowel problem)?
   Yes
   No, Skip to Question 122
   Not sure/can’t remember, Skip to Question 122

121. If YES to #120, in the last year, how often have you seen a Registered Dietitian?
   Never
   About Once a month
   About 6 times per year
   About 3 times per year
   About 1 time per year
   About Every other year
   Other (please specify:_________

122. Has a healthcare professional ever given you information about eating disorders?
   Yes
   No, Skip to Question 124
   Not sure/I don’t remember, Skip to Question 124

123. If YES to #122, please check below all who gave you information about eating disorders after you were diagnosed with your bowel problem. (Check all that apply)
   General Physician
   Endocrinologist
   Nurse
   Registered Dietitian
   Psychologist
   Gastroenterologist
   Ophthalmologist (Eye doctor)
   Podiatrist (Foot doctor)
   Other, specify ________
   Not sure/can’t remember

124. How knowledgeable are you about your bowel problem?
   Very knowledgeable
   Knowledgeable
   Somewhat knowledgeable
   Not knowledgeable
   Not knowledgeable at all

125. How satisfied are you with your knowledge of your bowel problem?
   Very satisfied
   Satisfied
   Neither satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

126. Name

127. Email (so we can contact you if you won!)

128. Phone with voice mail (so we can contact you if you won!)
Group 5: Celiac Disease Follow-Up Survey

Thanks for agreeing to participate! This survey will take about 20 minutes to complete. Got questions? Email us at foodstudy@aesop.rutgers.edu

Recently you completed an online eating survey. In that survey you indicated that you have Celiac Disease. Do you have Celiac Disease?

Yes—start survey
No—end survey (thank you for participating!)

Please select the answer that best describes you.

1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
   Yes
   No

2. Are you more sensitive to pain than other people?
   Yes
   No

3. Are you afraid of illness?
   Yes
   No

4. Do you think that you worry about your health more than most people?
   Yes
   No

5. Do you find that you get jealous of other people’s good health?
   Yes
   No

6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
   Yes
   No

7. Are you upset by the way people react to your health condition?
   Yes
   No

8. Do you often think that you might suddenly fall ill?
   Yes
   No
9. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?
   Yes
   No

10. Do you think there is something seriously wrong with your body?
    Yes
    No

11. Does your health condition interfere with your life a great deal?
    Yes
    No

12. If the doctor told you that they could find nothing wrong with you, would you believe them?
    Yes
    No

13. Do you find that you are often aware of various things happening in your body?
    Yes
    No

14. Are you sleeping well?
    Yes
    No

15. Do you find that you are bothered by many different symptoms?
    Yes
    No

16. Do you think that your symptoms may be caused by worry?
    Yes
    No

17. Is your bad health the biggest difficulty of your life?
    Yes
    No

18. Do you think there is something the matter with your mind?
    Yes
    No

19. Are you bothered by many pains and aches?
    Yes
    No
20. Do you ever think of your current health condition as a punishment for something you have done wrong in the past?
   Yes
   No

21. Can you express your personal feelings easily to other people?
   Yes
   No

22. When you are angry, do you tend to bottle up your feelings?
   Yes
   No

23. Do you prefer to keep your feeling to yourself?
   Yes
   No

24. Is it easy for you to let people know when you are cross with them?
   Yes
   No

25. Is it hard for you to show people your personal feelings?
   Yes
   No

26. Do you often find that you lose patience with other people?
   Yes
   No

27. Are you more irritable towards other people?
   Yes
   No

28. Do you find that you get angry easily?
   Yes
   No

29. Are you easy to get along with when you are feeling sick?
   Yes
   No

30. Does your current health condition affect the way you get along with your family or friends a great deal?
   Yes
   No
31. If you feel ill or worried about your health condition, can you easily be cheered up by the doctor?
Yes
No

32. Does it upset you to talk to the doctor about your health condition?
Yes
No

33. Are you always a cooperative patient?
Yes
No

When you are in a difficult or stressful situation, how do you usually respond?

34. I criticize myself.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

35. I give up the attempt to cope.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

36. I try to come up with a strategy about what to do.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

37. I think hard about what steps to take.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

38. I use alcohol or other drugs to make myself feel better.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot
39. I take action to try to make the situation better.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

40. I get emotional support from others.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

41. I learn to live with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

42. I make jokes about it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

43. I express my negative feelings.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

44. I try to find comfort in my religion or spiritual beliefs.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

45. I refuse to believe that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

46. I accept the reality of the fact that it has happened.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

47. I get comfort and understanding from someone.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

48. I give up trying to deal with it.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

49. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

50. I say to myself “this isn’t real.”
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

51. I pray or meditate.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

52. I say things to let my unpleasant feelings escape.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

53. I make fun of the situation.
I usually don’t do this at all
I usually do this a little bit
I usually do this a medium amount
I usually do this a lot

54. I try to see it in a different light, to make it seem more positive.
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

55. I use alcohol or other drugs to help me get through it.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

56. I turn to work or other activities to take my mind off things.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

57. I look for something good in what is happening.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

58. I concentrate my efforts on doing something about the situation.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

59. I blame myself for things that happened.  
I usually don’t do this at all  
I usually do this a little bit  
I usually do this a medium amount  
I usually do this a lot

How certain are you that you can manage to stick to eating healthy foods?

60. I can manage to stick to eating healthy foods, even if I need a long time to develop the necessary routines.  
Very uncertain  
Rather uncertain  
Rather certain  
Very certain

61. I can manage to stick to eating healthy foods, even if I have to try several times until it works.
62. I can manage to stick to eating healthy foods, even if I have to rethink my entire way of eating.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

63. I can manage to stick to eating healthy foods, even if I do not receive a great deal of support from others when making my first attempts.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

64. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.
   Very uncertain
   Rather uncertain
   Rather certain
   Very certain

Please read each question carefully and choose the answer that best describes how you have felt during the past few weeks.

65. During the past few weeks, how often has your celiac disease made you feel depressed?
   All the time
   Often
   Sometimes
   Seldom
   Never

66. During the past few weeks, how often has your celiac disease made you feel angry?
   All the time
   Often
   Sometimes
   Seldom
   Never

67. During the past few weeks, how often has your celiac disease made you feel irritable?
   All the time
   Often
68. During the past few weeks, how often has your celiac disease made you feel anxious?
   All the time
   Often
   Sometimes
   Seldom
   Never

69. During the past few weeks, how often has your celiac disease made you feel frustrated?
   All the time
   Often
   Sometimes
   Seldom
   Never

70. During the past few weeks, how often has your celiac disease made you feel helpless?
   All the time
   Often
   Sometimes
   Seldom
   Never

71. During the past few weeks, how often has your celiac disease made you feel isolated?
   All the time
   Often
   Sometimes
   Seldom
   Never

72. During the past few weeks, how often has your celiac disease made you feel like you are losing control of your life?
   All the time
   Often
   Sometimes
   Seldom
   Never

73. During the past few weeks, how often has your celiac disease made you feel like your life revolves around your celiac disease?
   All the time
   Often
   Sometimes
Seldom
Never

74. During the past few weeks, how often has your celiac disease made you feel like life is less enjoyable?
All the time
Often
Sometimes
Seldom
Never

75. During the past few weeks, my celiac disease negatively affected the time I was able to spend doing light tasks like preparing a snack or walking around.
All the time
Often
Sometimes
Seldom
Never

76. During the past few weeks, my celiac disease negatively affected the time I was able to spend doing vigorous activities like exercising or sports.
All the time
Often
Sometimes
Seldom
Never

77. During the past few weeks, my celiac disease has made me feel tired and sluggish.
All the time
Often
Sometimes
Seldom
Never

78. During the past few weeks, my celiac disease kept me from getting as much done as I would have liked.
All the time
Often
Sometimes
Seldom
Never

79. During the past few weeks, my celiac disease has caused me to feel physically ill.
All the time
Often
Sometimes
Seldom
Never

80. During the past few weeks, my celiac disease has prevented me from going places I wanted to go.
All the time
Often
Sometimes
Seldom
Never

81. During the past few weeks, my celiac disease has prevented me from doing things I wanted to do.
All the time
Often
Sometimes
Seldom
Never

82. During the past few weeks, my celiac disease caused me to miss work or school.
All the time
Often
Sometimes
Seldom
Never

83. During the past few weeks, my celiac disease has made me feel frustrated because I could not eat when I wanted.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

84. During the past few weeks, my celiac disease has made me feel frustrated because I could not eat the kinds of foods I wanted.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

85. During the past few weeks, my celiac disease has made me feel frustrated because I could not eat the amount of food I wanted.
Strongly agree
Agree
Neither  
Disagree  
Strongly disagree  

86. During the past few weeks, my celiac disease has made it difficult for me to keep my weight where I’d like it to be.  
Strongly agree  
Agree  
Neither  
Disagree  
Strongly disagree  

87. During the past few weeks, my celiac disease has limited what I can wear.  
Strongly agree  
Agree  
Neither  
Disagree  
Strongly disagree  

88. During the past few weeks, I have been embarrassed by needing to be near a bathroom or the smell caused by my bowel problem.  
Strongly agree  
Agree  
Neither  
Disagree  
Strongly disagree  

89. During the past few weeks, I think I irritated others because of what I need to do to control my celiac disease.  
Strongly agree  
Agree  
Neither  
Disagree  
Strongly disagree  

90. During the past few weeks, my celiac disease has interfered with me having satisfactory intimate relationships.  
Strongly agree  
Agree  
Neither  
Disagree  
Strongly disagree  

91. I worry that my celiac disease will limit my future career.  
Strongly agree  
Agree
Neither
Disagree
Strongly disagree

92. I worry that my celiac disease will get worse.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

93. I worry about losing control of my bowels.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

94. I worry that my celiac disease will shorten my life.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

95. I worry that because of my celiac disease I will never be able to lead an independent life.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

96. I am concerned that my celiac disease are stressful for those who are close to me.
Strongly agree
Agree
Neither
Disagree
Strongly disagree

97. I often eat something I shouldn’t rather than tell people I have celiac disease.
Strongly agree
Agree
Neither
Disagree
Strongly disagree
98. My celiac disease has made it difficult for me to be around people I do not know well.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

99. I find that my friends don’t always understand the limits that my celiac disease places on me.
   Strongly agree
   Agree
   Neither
   Disagree
   Strongly disagree

Please tell us about you.

100. At what age were you first diagnosed with celiac disease?
   1 year or less
   2 years
   3 years
   4 years
   5 years
   6 years
   7 years
   8 years
   9 years
   10 years
   11 years
   12 years
   13 years
   14 years
   15 years
   16 years
   17 years
   18 years
   19 years
   20 years
   21 years
   22 years
   23 years
   24 years
   25 years or older

101. Have you had any serious medical complications with celiac disease after being diagnosed?
Yes
No, Skip to Question 104

102. If YES to #101, at what age did you have your last serious medical complication caused by celiac disease?
1 year or less
2 years
3 years
4 years
5 years
6 years
7 years
8 years
9 years
10 years
11 years
12 years
13 years
14 years
15 years
16 years
17 years
18 years
19 years
20 years
21 years
22 years
23 years
24 years
25 years or older

103. What was the medical complication? (Briefly describe below)

104. When you were first diagnosed with celiac disease, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your condition?
Never
About 1 time per week
About 1 time per month
About Every 3 months
About Every 6 month
About 1 time per year
Not sure/ can’t remember
Other (please specify:_________)

105. When first diagnosed with celiac disease, which of these healthcare professionals did you visit at least 2 times per year? (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

106. When you were first diagnosed with celiac disease, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

107. When first diagnosed with celiac disease, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not sure/can’t remember

108. When first diagnosed with celiac disease, how often did the cost of medicine keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never
Not sure/can’t remember

109. When first diagnosed with celiac disease, how often did the cost of specialized food keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never
Not sure/can’t remember
110. When first diagnosed with celiac disease, how satisfied were you with your celiac disease treatment?
Very satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisfied
Very dissatisfied
Not sure/can’t remember

111. Currently, which of these healthcare professionals do you visit at least 2 times per year? *(Check all that apply)*
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
None of the above
Other, Specify:
Not sure/can’t remember

112. Currently, how would you describe your relationship with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

113. Currently, how would you describe your communication with your healthcare team?
Very good
Good
Okay
Bad
Very bad
Not applicable

114. Currently, how often does the cost of medicine keep you from following your healthcare team’s advice?
All the time
Often
Sometimes
Seldom
Never

115. Currently, how often does the cost of specialized food keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

116. Currently, how satisfied are you with your celiac disease treatment?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
   Dissatisfied
   Very dissatisfied

117. Do you follow a gluten-free diet?
   Yes
   No, Skip to Question 119
   Choose not to answer, Skip to Question 119

118. If YES to #117, how closely are you able to follow the gluten-free diet?
   Very closely
   Closely
   Somewhat closely
   Not closely
   Not closely at all

119. During the last year, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your celiac disease?
   Never
   About 1 time per week
   About 1 time per month
   About Every 3 months
   About Every 6 month
   About 1 time per year
   Other (please specify:_________)

120. Have you ever seen a Registered Dietitian (someone who helped you plan a diet to manage your celiac disease)?
   Yes
   No, Skip to Question 122
   Not sure/ can’t remember, Skip to Question 122

121. If YES to #120, in the last year, how often have you seen a Registered Dietitian?
   Never
About Once a month
About 6 times per year
About 3 times per year
About 1 time per year
About Every other year
Other (please specify: ________)

122. Has a healthcare professional ever given you information about eating disorders?
Yes
No, Skip to Question 124
Not sure/I don’t remember, Skip to Question 124

123. If YES to #122, please check below all who gave you information about eating disorders after you were diagnosed with celiac disease. (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
Other, specify ________
Not sure/can’t remember

124. How knowledgeable are you about celiac disease?
Very knowledgeable
Knowledgeable
Somewhat knowledgeable
Not knowledgeable
Not knowledgeable at all

125. How satisfied are you with your knowledge of celiac disease?
Very satisfied
Satisfied
Neither satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

126. Name

127. Email (so we can contact you if you won!)

128. Phone with voice mail (so we can contact you if you won!)
Appendix F
SURVEY ITEMS & SCORING PROTOCOL
Enclosed is a collection of the surveys used in the Eating Behavior study. Survey items have been included along with the scoring protocols for each of the measures used. The purpose of this document is to provide a complete description of how the raw survey data was scored in the final analyses.

Three-Factor Eating Questionnaire (TFEQ-18)$^{173}$
The Three-Factor Eating Questionnaire assesses dietary restraint, disinhibition, and emotional eating constructs, which further examines self-regulation towards eating found in the Social Cognitive Theory$^{223, 259}$. Emotional eating and disinhibition scales with 3-items from each respective scale were only assessed from their original scales.

**TFEQ Items**
**Disinhibited Eating**
1. Sometimes when I start eating, I just can’t seem to stop.
2. I am always hungry enough to eat at any time.
3. I am always hungry, so it is hard for me to stop eating before I finish the food on my plate.

**Emotional Eating**
4. When I feel lonely, I console myself by eating.
5. When I feel blue, I often overeat.
6. When I feel anxious, I find myself eating.

**TFEQ Scoring Methodology**
1. Raw data had assigned values of 1-4 based on the numerical response (definitely false=1, mostly false=2, mostly true=3, definitely true=4).
2. Items for each scale were averaged for means scale scores for Disinhibited Eating and Emotional Eating.
The Dichotomous in Thinking Eating Disorders Scale (DTEDS)\textsuperscript{158} assesses the presence of a rigid, “black-and-white” cognitive thinking style. The original DTEDS is an 11-item, 4-point Likert scale, with 2 scales (Eating [items 1-4], General [items 5-11]). The original DTEDS has response items: not at all true of me, slightly true of me, fairly true of me, and very true of me. However, for this study the answer choice responses were changed to definitely false, mostly false, mostly true and definitely true, with only the Eating scale examined.

**DTEDS Items**

**Eating Scale**
1. I think of food as either “good” or “bad.”
2. I view my attempts to diet as either successes or failures.
3. When dieting, if I eat something that I had planned \textit{not} to, I think that I have failed.
4. When dieting, I view my eating as having been either good or bad.

**DTEDS Scoring Methodology**
1. Raw data were originally assigned values of 1-4 based on the numerical response (definitely false=1, mostly false=2, mostly true=3, definitely true=4).
2. Items were summated and averaged into a mean scale score for only those who reported dieting, as questions 2 to 4 are not applicable for those who do not diet. Higher mean scores indicate greater eating dichotomous thinking (score range 1 to 4).
3. All participants answered question 1, which was included in the regression model for predicting disturbed eating. Higher scores indicate greater dichotomous thinking.
The Wong & Law Emotional Intelligence Scale (WLEIS)
The Wong & Law Emotional Intelligence Scale (WLEIS)\textsuperscript{236} is a 16-item, 7-point Likert (strongly disagree to strongly agree) instrument with four scales: Self-Emotion Appraisal (i.e., ability to perceive and understand the emotions of those people around one’s self), Uses of Emotion (i.e., ability of an individual to make use of their emotions by directing them towards constructive activities and personal performance), Regulation of Emotion (i.e., ability of people to regulate their emotions), and Others’ Emotion Appraisal (i.e., ability to perceive and understand the emotions of those people around them). Only 4-items from the original Regulation of Emotion scale was assessed in this study. All items were summed for an overall scale score with higher scores indicating higher emotional intelligence.

**WLEIS Items**

**Regulation of Emotion Scale**
1. I am able to control my temper and handle difficulties rationally.
2. I am quite capable of controlling my own emotions.
3. I can always calm down quickly when I am very angry.
4. I have good control of my own emotions.

**WLEIS Scoring Methodology**
1. Raw data were originally assigned values of 1-7 based on the numerical response (strongly disagree=1, disagree=2, moderately disagree=3, neither agree nor disagree=4, moderately agree=5, agree=6, strongly agree=7).
2. Items were summated for an overall score. Higher scores indicate greater ability to regulate one’s emotions (score range 7 to 28).
Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3)\textsuperscript{209}

The Sociocultural Attitudes Towards Appearance Questionnaire measures media influences towards body image. The original scales are internalization-general (n=9), internalization-athlete (n=4), pressures-media (n=7), and information-media (n=9) are constructs from the Social Comparison Theory\textsuperscript{201} and Gerbner’s Cultivation Theory\textsuperscript{199, 419}. Original answer choices are definitely disagree, mostly disagree, neither agree or disagree, mostly agree, and definitely agree. However, for this study only the following scales with their original items were included: internalization-general (n=1), pressures-media (n=4), and information-media (n=4). The answer choices were slightly modified to strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree.

SATAQ-3 Items
Internalization-General
1. I compare my body to the bodies of people who are on TV and movie stars.

Pressures-Media
2. I have felt pressure from TV or magazines to have a perfect body.
3. I do not compare my body to the bodies of people who appear in magazines.*
4. I have felt pressure from TV or magazines to lose weight.
5. I have felt pressure from TV and magazines to be thin.

Information-Media
6. Movies are an important source of information about fashion and “being attractive.”
7. TV is an important source of information about fashion and “being attractive.”
8. Magazines are not an important source of information about fashion and “being attractive.”*
9. Movie stars are not an important source of information about fashion and “being attractive.”*

*Indicates reverse scoring

SATAQ-3 Scoring Methodology
1. Raw data were originally assigned values of 1-5 based on the numerical response (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5).
2. Data was recoded for items 3, 8 & 9 so that they were reverse scored (strongly disagree=5, disagree=4, neither agree nor disagree=3, agree=2, strongly agree=1).
3. Items were summated and averaged for mean scale scores for their respective scales. Higher mean scores for all scales indicate greater influences from the media towards body image (score range 1 to 5).
**Health Motivation**

The Health Motivation instrument assesses the health value construct from the Social Learning Theory. It is a 4-item, 5-point Likert scale that measures the importance one places on his or her individual health. Items are scored 1, 2, 3, 4, or 5 for strongly agree, agree, neither agree nor disagree, agree, and strongly agree, respectively. All items are summed for a global score with higher scores indicating greater emphasize placed on one’s health.

**Health Motivation Items**
1. My health is the most important consideration in my life.
2. Whenever I am ill, I usually don’t take it seriously.*
3. I only think about my health from time to time.*
4. Whenever I am ill, no matter how mild the symptom, I take it seriously.

*Indicates reverse scored

**Health Motivation Scoring Methodology**
1. Raw data were originally assigned values of 1-5 based on the numerical response (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5).
2. Data was recoded for items 2 & 3 so that they were reverse scored (strongly disagree=5, disagree=4, neither agree nor disagree=3, agree=2, strongly agree=1).
3. Items were summated and averaged into a mean scale score. Higher mean scores indicate a greater importance one places on their health (score range 1 to 5).
Rosenberg Self Esteem (RSE)\textsuperscript{224}

The Rosenberg Self Esteem scale\textsuperscript{224} is a 10-item, 4-point Likert scale that assesses the Social Cognitive Theory\textsuperscript{259} and Integrated Behavioral Model\textsuperscript{223} construct of self-esteem. A score for each item is determined by assigning a score of 3, 2, 1, and 0 for strongly agree, agree, disagree and strongly disagree respectively. For this study only 4-items with high Cronbach alpha scores were retained from the original RSE and the Likert scale was altered to a 5-point scale (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5).

RSE Items
1. At times, I think I am no good at all.
2. Sometimes I feel useless.
3. All in all, I am inclined to feel that I am a failure.
4. I take a positive attitude toward myself.*

*Indicate reverse scored

RSE Scoring Methodology
1. Raw data were originally assigned values of 1-5 based on the numerical response (strongly disagree=5, disagree=4, neither agree nor disagree=3, agree=2, strongly agree=1).
2. Data was recoded for item 4 so that it was reverse scored (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5).
3. Items were summated and averaged into a mean scale score. Higher mean scores indicate higher self-esteem.
Appearance Schema Inventory Revised\(^{188}\) (ASI-R)

The Appearance Schema Inventory, a 20-item (self-evaluative=12 items, motivational salience=8 items) measures one’s physiological investment in one’s appearance, an important body image construct\(^{88,186}\). Items are scored 1, 2, 3, 4, and 5 for strongly agree, mostly agree, neither agree or disagree, mostly disagree, and strongly disagree respectively. By summing all 20-items a mean composite score can be determined and respective mean scale scores can be calculated. This study only retained 8-items from the original self-evaluative scale and 4-items from the original motivational salience scale. The 5-point Likert scale was modified slightly (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5).

**ASI-R Items**

**Self-Evaluative Scale**
1. When I see good-looking people, I wonder about how my own looks measure up.
2. When something makes me feel good or bad about my looks, I tend to dwell on it.
3. When I meet people for the first time, I wonder what they think about how I look.
4. I blame my appearance for many of the things that have happened to me in my life.
5. I fantasize about what it would be like to be better looking than I am.
6. By controlling my appearance, I can control many of the social and emotional events in my life.
7. In my everyday life, lots of things happen that make me think bout what I look like.
8. If I like how I look on a given day, it’s easy to feel happy about other things.

**Motivational Salience Scale**
1. I often check my appearance in a mirror just to make sure I look okay.
2. What I look like is an important part of who I am.
3. I spend little time on my physical appearance.*
4. I try to be as physically attractive as I can be.

*Reverse Scored

**ASI-R Scoring Methodology**
1. Raw data were originally assigned values of 1-5 based on the numerical response (strongly disagree=1, disagree=2, neither agree nor disagree=3, agree=4, strongly agree=5). Only item 3 in the motivational salience scale is reverse scored (i.e., strongly disagree=5, disagree=4, neither agree nor disagree=3, agree=2, strongly agree=1).
2. Items were summated and averaged into mean scale scores and an overall mean global score. Higher scale mean scores indicate greater investment in one’s appearance (score range 1 to 5).
Coping Inventory for Stressful Situations (CISS-21)\textsuperscript{231}

The Coping Inventory for Stressful Situations (CISS-21)\textsuperscript{231} developed by Endler is a 21-item, 5-point Likert scale (not at all to very much) with 3 scales (Task-Oriented [7 items], Emotion-Oriented [7 items] and Avoidance Coping [7 items]\textsuperscript{230}. Task-Oriented coping is purposeful efforts aimed at solving problems and cognitively restructuring/altering problems. Emotion-Oriented coping refers to emotional reactions that are self-oriented in the efforts to handle stressful situations. Avoidance coping refers to activities and cognitive changes aimed to avoid situations (e.g., distracting oneself). For this study only 3-items from the original Task-Oriented Coping scale, 3-items from Emotion-Oriented Coping scale and 1-item from Avoidant Coping scale were retained.

**CISS-21 Items**

**Task-Oriented Coping Scale**

1. When faced with a stressful situation, I determine a course of action and follow it.
2. When faced with a stressful situation, I work to understand the situation.
3. When faced with a stressful situation, I think about the event and learn from my mistakes.

**Emotion-Oriented Coping Scale**

4. When faced with a stressful situation, I blame myself for having gotten into the situation.
5. When faced with a stressful situation, I blame myself for being too emotional about the situation.
6. When faced with a stressful situation, I blame myself for not knowing what to do.

**Avoidant Coping Scale**

7. When faced with a stressful situation, I spend time with a special person.

**CISS-21 Scoring Methodology**

1. Raw data were originally assigned values of 1-5 based on the numerical response (not at all=1, slightly=2, somewhat=3, moderately=4, very much=5).
2. Items were summated and averaged into mean scale scores. Higher mean scores on Emotion-Oriented and Avoidance coping scales indicate poor coping abilities, while higher mean scores on the Task-Oriented coping scales indicate better coping abilities.
Perception of Teasing Scale (POTS)\textsuperscript{214}

The Perception of Teasing Scale measures perceptions of teasing, an interpersonal factor in the Social Cognitive Theory\textsuperscript{259}. Twelve items index frequencies and emotional responses with regards to weight teasing, and items 10 index frequencies and emotional responses with regards to competency/abilities teasing. The frequency scales are rated from never to very often with never=1 and very often=5 while the emotional responses to each item are rated from not upset to very upset with not upset=1 and very upset=5. All items in a scale are summed for index frequencies and emotional responses separately to obtain a final perception teasing score. For this study only 3 items with emotional responses from each of these 3-items in the weight teasing scale of the POTS were retained.

**POTS Items**
**Weight Teasing Scale**
1. When you were between the ages of 5 and 16, how often did people make fun of you because your weight?
   - 1 Never, Skip to Question 3
   - 2
   - 3 Sometimes
   - 4
   - 5 Very Often

2. How upset were you?
   - 1 Not Upset
   - 2
   - 3 Somewhat Upset
   - 4
   - 5 Very Upset

3. When you were between the ages of 5 and 16, how often did people call you names like “fatso”?
   - 1 Never, Skip to Question 5
   - 2
   - 3 Sometimes
   - 4
   - 5 Very Often

4. How upset were you.
   - 1 Not Upset
   - 2
   - 3 Somewhat Upset
   - 4
   - 5 Very Upset
5. When you were between the ages of 5 and 16, how often did people laugh at you because of your weight?
1 Never, Skip Question 6
2
3 Sometimes
4
5 Very Often

6. How upset were you?
1 Not Upset
2
3 Somewhat Upset
4
5 Very Upset

**POTS Scoring Methodology**
1. Raw data were originally assigned values of 1-5 based on the numerical response seen above.
2. Items were summated and averaged into mean scale scores for index frequencies (items 1, 3, 5) and for emotional responses (items 2, 4, 6). Higher mean scores on index frequencies indicate a greater level of weight-related teasing as a child, and higher mean scores on the emotional responses indicate a higher degree of being upset from those that were teased about their weight as a child (score range 1 to 5).
3. Take into account those that are not teased about their weight, as participants will skip the emotional response items if they were not teased about their weight as a child.
4. Participants who were only weight teased were further examined for the number of insults (1-3) and type of weight teasing insults (i.e., name called fatso, laughed at, made fun of) by frequency analysis.
Childhood Family Mealtime Questionnaire (CFMQ)\textsuperscript{220} 

The Childhood Family Mealtime Questionnaire\textsuperscript{220} assesses an individual’s recollection of mealtime experiences during childhood. This is a 69-item, 5-point Likert scale (never, rarely, sometimes, usually, always) instrument with only 35 of the questions in the following scales: Mealtime Communication Based Stress (11 items), Mealtime Structure (7 items), Appearance Weight Control (6 items), Parental Mealtime Control (3 items), Emphasis on Mother’s Weight (3 items), Present Parental Meal Influences (2 items), and Traditional Family (3 items). For this study only items with high Cronbach alpha scores from the following scales in the CFMQ were retained: Mealtime Communication Based-Stress (5 items), Mealtime Structure (3 items), Appearance Weight Control (5 items), and Emphasis on Mother’s Weight (3 items).

**CFMQ Items**

**Mealtime Communication Based Stress**
1. When I was young, I liked eating dinner with my family.*
2. When I was young, because of stress during meals, I liked to or wished I could eat alone. [B]
3. When I was young, I remember feeling nervous during dinner.
4. When I was young, it was a relief when my father was not at dinner.
5. When I was young, I felt able to speak my mind during mealtimes.*

**Mealtime Structure**
6. When I was young, at meals, I was told not to waste food.
7. When I was young, if I did not like what we were having for dinner, I had to eat it anyway.
8. When I was young, I had to clean my plate (i.e., eat all the food on it) at home.

**Appearance Weight Control**
9. When I was young, I remember worrying about my weight.
10. When I was young, I remember thinking about my weight.
11. When I was young, I was encouraged to diet.
12. When I was young, my family thought of beauty as depending a lot on weight.
13. When I was young, my family talked about our own or each other’s weight.

**Emphasis on Mother’s Weight**
14. When I was young, my mother dieted.
15. When I was young, my mother worried about her weight.
16. When I was young, my father commented about my mother’s weight when I was young.

*Indicate reverse scored

**CFMQ Scoring Methodology**
1. Raw data were originally assigned values of 1-5 based on the numerical response (never=1, rarely=2, sometimes=3, usually=4, always=5).
2. Data was recoded for items 1 & 5 so that it was reverse scored (never=5, rarely=4, sometimes=3, usually=2, always=1). Items were summated and averaged into their respective scale mean scores.
Night Eating Questionnaire (NEQ)\textsuperscript{121}

The Night Eating Questionnaire (NEQ)\textsuperscript{121} assesses the behavioral and psychological symptoms of night eating syndrome (NES). The NEQ is a 14-item, 5-point Likert scale (e.g., never to always) with 1 additional item for question 7 being a dichotomous (yes/no). The first 9-items assess variables occurring before sleep onset (e.g., how hungry are you usually in the morning) with stop criteria built into the remaining items. Items 10 to 12 are answered only by participants who get up in the middle of the night for reasons other than just to use the bathroom. Questions 13 and 14 are only answered by participants who eat when they wake up in the middle of the night. All items are scored 0 to 4 with exception to the additional item 7 that includes a “check here if you mood does not change during the day,” this is scored as 0. Items 1, 4, and 14 are reverse scored to have higher values reflect greater symptomatology. All items are summed to obtain a global score, except for item 13, which is only used as a screening tool to rule out the presence of the parasomnia sleep-related eating disorder\textsuperscript{121}. In this study, only 6-items from the NEQ were retained to assess features of NES.

**NEQ Items**

1. How much of your daily food intake do you consume after suppertime?
   - None
   - Up to a quarter
   - About half
   - More than half
   - Almost all

2. Other than only to use the bathroom, how often do you get up at least once in the middle of the night?
   - Never, skip the rest of these questions
   - Less than once a week
   - About once a week
   - More than once a week
   - Every night

3. Do you have cravings or urges to eat snacks when you wake up at night?
   - Not at all
   - A little
   - Somewhat
   - Very much so
   - Extremely so

4. Do you need to eat in order to get back to sleep when you awake at night?
   - Not at all
   - A little
   - Somewhat
   - Very much so
   - Extremely so
5. When you get up in the middle of the night, how often do you snack?
   Never, Skip Question 6
   Sometimes
   About half the time
   Usually
   Always

6. How much control do you have over your eating while you are up at night?*
   None at all
   A little
   Somewhat
   Very much
   Complete

*Indicates reverse scored

**NEQ Scoring Methodology**
1. Raw data for items 1 to 5 were assigned values of 1-5 based on the numerical responses (i.e., never to always; none at all to complete; none to almost all; not at all to extremely so; never to every night). Item #6 was reverse scored (i.e., 5=none at all, 4=a little, 3=somewhat, 2=very much, 1=completely).
2. Participants were coded as a night eater if they reported getting up in the middle of the night (i.e., score of 2 or greater for question #2) and ate at least half or more of their daily food intake after suppertime (i.e., score of 3 or higher for question #1). By multiplying those that are night eaters (score 1) and non-night eaters (score of 0) to the sum of all 6 items, a total Night Eating Severity score was calculated. Higher scores indicate greater night eating severity (score range 0 to 30).
Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire (PHQ-9) is a 9-item, 4-point Likert scale self-report screening tool used to assess severity of depression\textsuperscript{140}. This instrument is a version of the PRIME-MD diagnostic instrument for common mental disorders\textsuperscript{141}. The PHQ-9 is the depression module that scores each of the 9 DSM-IV criteria as 0 (not at all), 1 (several days), 2 (more than half the days) and 3 (nearly every day). A global score for depression severity is calculated by summing all items. Score ranges from 0 to 4 indicate no depression, 5 to 9 mild depression, 10 to 14 moderate depression, 15 to 19 moderately severe depression, and 20 to 27 severe depression. The PHQ-9 is a reliable and valid self-report instrument that is brief and easy for clinicians and researchers to assess depression severity and make criteria-based diagnoses for depressive disorders\textsuperscript{140}. This study does not include item 9 from the original PHQ-9 that asks about thoughts of harming oneself.

PHQ-9 Items
1. During the past 2 weeks, I have had little interest or pleasure in doing things.
2. During the past 2 weeks, I have felt down, depressed, hopeless.
3. During the past 2 weeks, I have trouble falling or staying asleep.
4. During the past 2 weeks, I have felt tired or had little energy.
5. During the past 2 weeks, I have had a poor appetite or have overeaten.
6. During the past 2 weeks, I have felt bad about myself---or that I am a failure and/or have let my family or myself down.
7. During the past 2 weeks, I have had trouble concentrating on things, such as reading the newspaper or watching television.
8. During the past 2 weeks, I have moved or spoken so slowly that other people could notice. Or the opposite—I have been so fidgety or restless that I have been moving around a lot more than usual.

PHQ-9 Scoring Methodology
1. Raw data were originally assigned values of 1-4 based on the frequency responses (i.e., not at all to nearly every day).
2. Frequency raw data was recoded to assign all items values 0 to 3 instead of 1 to 4 (e.g., 0=not at all, 1=several days, 2=more than half the days, 3=nearly every day).
3. A global score was calculated by summing all items.
4. Groups were categorized based on their overall PHQ-9 score that assesses their depression severity as follows: score ranges from 0 to 4 indicate no depression, 5 to 9 mild depression, 10 to 14 moderate depression, 15 to 19 moderately severe depression, and 20 to 24 severe depression.
Generalized Anxiety Disorder (GAD-7)

The Generalized Anxiety Disorder (GAD-7) is a brief anxiety scale that is reliable and valid in assessing anxiety severity\textsuperscript{152}. This brief 7-item instrument uses a 4-point Likert scale (not at all=0, several days=1, more than half the days=2, nearly every day=3) that has subjects respond to a list of criteria corresponding to anxiety (e.g., feeling nervous, anxious or on the edge) over a period of the last two weeks. A global score is calculated by summing all items. The following score ranges categorize the severity level of anxiety for individuals: 0 to 4 is minimal, 5 to 9 is mild, 10 to 14 is moderate, and 15 to 21 is severe\textsuperscript{152}.

GAD-7 Items
1. During the past 2 weeks, how often have you felt nervous, anxious, or on edge?
2. During the past 2 weeks, how often have you not been able to stop worrying or control worrying?
3. During the past 2 weeks, how often have you worried too much about different things?
4. During the past 2 weeks, how often have you had trouble relaxing?
5. During the past 2 weeks, how often have you been so restless that it’s hard to sit still?
6. During the past 2 weeks, how often have you become easily annoyed or irritable?
7. During the past 2 weeks, how often have you felt afraid as if something awful might happen?

GAD-7 Scoring Methodology
1. Raw data were originally assigned values of 1-4 based on the frequency responses (i.e., not at all to nearly every day).
2. Frequency raw data was recoded to assign all items values 0 to 3 instead of 1 to 4 (e.g., 0=not at all, 1=several days, 2=more than half the days, 3=nearly every day).
3. A global score was calculated by summing all items.
4. Groups were categorized based on their overall GAD-7 score, that assesses their anxiety severity as follows: 0 to 4 is minimal, 5 to 9 is mild, 10 to 14 is moderate, and 15 to 21 is severe.
Florida Obsessive Compulsive Inventory (FOCI)\textsuperscript{163}

The Florida Obsessive Compulsive Inventory (FOCI)\textsuperscript{163} is a 20-item self-report questionnaire that has separate scales for symptom enumeration (20-item checklist) and evaluation of symptom severity (5-item severity scale). The 20-item checklist (yes or no responses) assesses the presence of behaviors considered to be OCD behaviors, such as being bothered by thoughts/images (items 1 to 4), worrying about terrible things (items 5 to 10), and being driven to perform specific acts (items 11 to 20). Participants complete the 5-item, 5-point semantic differential (e.g., no avoidance to extreme avoidance) symptom severity scale if they check “yes” to one of more OCD behaviors in the 20-item checklist. The semantic differential scales are scored from 0 to 4 with higher scores indicating elevated OCD severity. This study placed the 20-item checklist into 3 questions with a checklist.

**FOCI Items**

1. During the past month, which of these thoughts or images has repeatedly entered your mind? \textit{(Check all that apply)}
   - Concerns with contamination (dirt, germs, chemicals, radiation) or acquiring a serious illness such as AIDS
   - Over concern with keeping objects (clothing, tools, etc.) in perfect order or arranged exactly
   - Images of death or other horrible events
   - Personally unacceptable religious or sexual thoughts
   - None of the above

2. During the past month, have you worried a lot about any of these things happening to you? \textit{(Check all that apply)}
   - Fire, burglary, or flooding of the house
   - Accidentally hitting a pedestrian with your car or letting it roll down a hill
   - Spreading an illness (like giving someone AIDS)
   - Losing something valuable
   - Harm coming to a loved one because you were \textbf{not} careful enough
   - None of the above

3. During the past month, have you felt driven to perform any of these acts over and over again? \textit{(Check all that apply)}
   - Excessive or ritualized washing, cleaning, or grooming
   - Checking light switches, water faucets, the stove, door locks, or the emergency brake
   - Counting, arranging, evening-up behaviors (making sure socks are at the same height)
   - Collecting useless objects or inspecting the garbage before it is thrown out
   - Repeating routine actions (in/out of chair, going through doorway, relighting cigarette) a certain number of times or until it feels just right
   - Needing to touch objects or people
   - Unnecessary rereading or rewriting; reopening envelopes before they are mailed
   - Examining your body for signs of illness
Avoiding colors (like “red” means blood), numbers (like “13” is unlucky), or names (like those that start with “D” signify death) that are associated with dreaded events or unpleasant thoughts

Needing to “confess” or repeatedly asking for reassurance that you said or did something correctly

None of the above

4. Did you choose NONE OF THE ABOVE as your answer for questions 1, 2, and 3?
   Yes, Skip Questions 5 to 9
   No

5. During the past month, about how much time each day is occupied by the thoughts or behaviors listed in Questions 1, 2, & 3?
   None
   Less than 1 hour
   1 to 3 hours
   3 to 8 hours
   More than 8 hours

6. During the past month, how much distress do the thoughts and behaviors in Questions 1, 2 and/or 3 cause you?
   No distress
   Mild distress
   Moderate distress
   Severe distress
   Extreme (disabling) distress

7. How much control do you have over the thoughts and behaviors in Questions 1, 2, and/or 3?*
   No control
   Little control
   Moderate control
   Much control
   Complete control

8. How much do the thoughts and behaviors in Questions 1, 2, and/or 3 cause you to avoid doing anything, going anyplace, or being with anyone?
   No avoidance
   Occasional avoidance
   Moderate avoidance
   Frequent and extensive avoidance
   Extreme avoidance (house-bound)

9. How much do the thoughts and behaviors in Questions 1, 2, and/or 3 interfere with your school, work, social, or family life?
   No interference
Slight interference
Moderate interference
Much interference
Extreme interference (disabling)

*Indicates reverse scored

FOCI Scoring Methodology
1. Raw data from items 1-3 were summed individually for a total of OCD checked responses.
2. Raw data for items 5 to 9 were originally assigned values of 1-5 based on their frequency responses (e.g., no distress to extreme distress).
3. Frequency raw data was recoded to assign all items values 0 to 4 instead of 1 to 5 (e.g., 0=no distress, 1=mild distress, 2=moderate distress, 3=severe distress, 4=extreme distress), except for item #9 that was reverse coded (0=complete control, 1=much control, 2=moderate control, 3=little control, 4=no control)
4. Recoded data from items 5 to 9 was summed for an overall OCD severity score for only participants who reported having an OCD behavior checked in questions 1-3, with higher scores indicating higher OCD severity (score range 0 to 20).
5. Item 4 can be recoded as Yes=1, No=0. Summing the number of responses from ‘YES’ will indicate how many people had one or more OCD behaviors.
Eating Disorder Examination Questionnaire (EDE-Q)
The Eating Disorder Examination Questionnaire (EDE-Q) is used to assess attitudes and behavioral psychopathology of eating disorders. The Restraint scale is a measure of the attempt to restrict food intake to influence shape and weight and/or for the purpose of sense of control. The Eating Concern scale measures one’s preoccupation with and feelings towards eating food. The Weight Concern scale measures feelings toward one’s weight. The Shape Concern scale assesses individual feelings toward one’s body shape and size. In addition to the four scales, a Binge Eating Module based on the DSM-IV diagnostic criteria is included.

EDE-Q Items
Restraint
1. **During the past 28 days**, how many days have you tried to influence your body shape or weight by deliberately limiting the amount of food you eat (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

2. **During the past 28 days**, how many days have you tried to influence your body shape or weight by going for long periods of time (8 waking hours or more) without eating anything at all?
   number of days (enter 0 to 28): ____________

3. **During the past 28 days**, how many days have you tried to influence your body shape or weight by not eating foods that you like (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

4. **During the past 28 days**, how many days have you tried to influence your body shape or weight by trying to follow definite rules regarding your eating (for example, a calorie limit), (whether or not you have succeeded)?
   number of days (enter 0 to 28): ____________

5. **During the past 28 days**, how many days have you tried to influence your body shape or weight by having a definite desire to have an empty stomach with the aim of influencing your shape or weight?
   number of days (enter 0 to 28): ____________

Eating Concerns Scale
6. **During the past 28 days**, how many days has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
   number of days (enter 0 to 28): ____________

7. **During the past 28 days**, how many days have you had a definite fear of losing control over eating?
   number of days (enter 0 to 28): ____________
8. During the past 28 days, how many days have you eaten in secret? Do not count episodes of binge eating. Binge eating means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

number of days (enter 0 to 28): ____________

9. During the past 28 days, how concerned have you been about other people seeing you eat? Do not count episodes of binge eating.

0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

10. During the past 28 days, what proportion of the times you have eaten did you feel guilty (felt that you’ve been bad) because of its effect on your shape or weight? Do not count episodes of binge eating.

None of the times
A few of the times
Less than half
Half of the times
More than half
Most of the time
Every time

Shape Concerns

11. During the past 28 days, how many days has thinking about your shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading?)

number of days (enter 0 to 28): ____________

12. During the past 28 days, how often have you had a definite desire to have a totally flat stomach?

number of days (enter 0 to 28): ____________

13. During the past 28 days, how often have you a definite fear that you might gain weight or become fat?

number of days (enter 0 to 28): ____________

14. During the past 28 days, how often have you felt fat?

number of days (enter 0 to 28): ____________

15. During the past 28 days, has your shape influenced how you think about (judge) yourself as a person?
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

16. During the past 28 days, how dissatisfied have you been with your shape?
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

17. During the past 28 days, how uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing, or taking a bath or shower? (only select 4, 5 or 6 if you have felt uncomfortable on some occasions)
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

18. During the past 28 days, how uncomfortable have you felt about others seeing your body; for example, in communal changing rooms, when swimming, or wearing tight clothes? (only select 4, 5 or 6 if you have felt uncomfortable on some occasions)
0 - Not at all
1
2 - Slightly
3
4 - Moderately
5
6 - A lot

Weight Concerns Scale
19. During the past 28 days, how many days has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)? [SAME QUESTION AS #6]
number of days (enter 0 to 28): ____________

20. During the past 28 days, how often have you had a strong desire to lose weight?
number of days (enter 0 to 28): ____________

21. During the past 28 days, has your weight influenced how you think about (judge) yourself as a person?
   0 - Not at all
   1
   2 - Slightly
   3
   4 - Moderately
   5
   6 - A lot

22. During the past 28 days, how upset would you be if you had been asked to weigh yourself once a week (no more, or less, often) for the next 4 weeks?
   0 - Not at all
   1
   2 - Slightly
   3
   4 - Moderately
   5
   6 - A lot

23. During the past 28 days, how dissatisfied have you been with your weight?
   0 - Not at all
   1
   2 - Slightly
   3
   4 - Moderately
   5
   6 - A lot

BED Module
24. Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food given the circumstances?
   specify number of times: ____________

25. Over the past 28 days, how many of these times that you ate what other people would regard as an unusually large amount of food given the circumstances, did you have a sense of having lost control over your eating (at the time you were eating)?
   specify number of times: ____________

26. Over the past 28 days, how many days have such episodes occurred (i.e., you have eaten an unusually large amount of food given the circumstances and had a sense of loss of control at the time)?
   specify number of days: ____________
27. **Over the past 28 days**, how many **times** have you made yourself sick (vomit) as a means of controlling your shape or weight? 
   specify number of times: ____________

28. **Over the past 28 days**, how many **times** have you used medicine (e.g., laxatives, insulin) as a means of controlling your shape or weight? 
   specify number of times: ____________

29. **Over the past 28 days**, how many **times** have you exercised in a “driven” or “compulsive” way as a means of controlling your weight, shape or amount of fat, or to burn off calories? 
   specify number of times: ____________

**EDE-Q Scoring Methodology**

1. Raw data for items 1-8, 11-14, and 19-20 were categorized and recoded as follows:
   0 = no days, 1 = 1-5 days, 2 = 6-12 days, 3 = 13-15 days, 4 = 16-22 days, 5 = 23-27 days, 6 = everyday. Items 9, 15-18, 21-23 was rescored by severity with scores 0, 1, 2, 3, 4, 5, 6 for not at all, slightly, moderately, and markedly, respectively. Item 10 was rescored as follows: none of the times = 0, a few of the times = 1, less than half = 2, half of the times = 3, more than half = 4, most of the time = 5, every time = 6. For the BED Module items (i.e., Questions 24-29) scoring see below (i.e., #5).

2. Mean scores are computed by summing and averaging recoded items from each scale (i.e., eating concerns, weight concerns, shape concerns, restraint, and BED module).
   - **Restraint Scale** = (Sum items 1-5)/5
   - **Eating Concerns** = (Sum items 6-10)/5
   - **Shape Concerns** = (Sum items 11-18)/8
   - **Weight Concerns** = (Sum items 19-23)/5

3. An overall or ‘global score’ was created by summing the eating, weight, and shape concerns and restrained eating scale scores and dividing by four. Higher global mean scores indicate greater eating disorder symptomatology (score range 0 to 6). The global mean score was not weighted in the overall Disturbed Eating Severity score.

4. The 75th and 90th percentiles for Restraint, and Eating, Shape and Weight Concerns scales were calculated and used to help determine cut-off scores for those that performed these types of behaviors normally (<75th percentile), more so than normal (≥75th to <90 percentile) and higher than normal (≥90th percentile). For all of these scales participants were recoded based on the percentile findings as <75th percentile = 0, ≥75th to <90 percentile = 1, and ≥90th percentile = 2. These recoded scale scores will be discussed in the calculation of the overall Disturbed Eating Severity score further below.

5. The Binge Eating Disorder Module items (i.e., questions 26-29) were rescored into a Binge Eating and Compensatory Behavior score as follows:
   a) A regular occurrence of Binge Eating (i.e., question 26) had a possible score range of 0 to 28 days.
   b) The Inappropriate Compensatory Behavior scale included the 3 BED items assessing frequency during the past 28 days that the participant engaged in self-
induced vomiting, medication misuse, and excessive exercise for the purpose of controlling weight and/or shape. Self-induced vomiting as a means of controlling shape or weight 4 or more times over the past 28 days is clinically significant\textsuperscript{264, 265}. Similarly, misusing medicine as a means of controlling shape or weight 4 or more times over the past 28 days is clinically significant. Excessively exercising 20 or more times over the past 28 days is clinically significant\textsuperscript{264, 265}. Each of the 3 BED inappropriate compensatory behavior items were scored from 0 to 6 based on the number of days the individual engaged in the behaviors. For the vomiting and medication misuse items, a score of 0 indicated no times of engaging in the behavior; 1 to 5 indicated 1 to 5 times, respectively, of engaging in the behavior; and 6 indicated engaging in the behavior at 6 or more times.

c) For the excessive exercise item, 0 indicated no times of engaging in excessive exercise; scores of 1, 2, 3, 4, 5, and 6 equaled exercising excessively for 1 to 5, 6 to 10, 11 to 15, 16 to 20, 21 to 25, or more than 25 times in the past 28 days, respectively. This score range was selected because a score of 4 (4 times of vomiting, and/or misusing medicine or 20 times of excessively exercising) is just above the scale mid-point of 3 and also allows for assignment of higher scores reflecting more frequent occurrences (i.e., severity) of this behavior.

d) The Compensatory Behavior scale score was calculated by averaging the scores of the 3 Inappropriate Compensatory Behaviors assessing frequency during the past 28 days that the participant engaged in self-induced vomiting, medication misuse, and excessive exercise for the purpose of controlling weight and/or shape.
Disturbed Eating Severity Score

The first step in calculating the Disturbed Eating Severity score is to determine the percentiles (i.e., 75th, 90th) for the scores of each of the nine Eating Behavior scales (i.e., Binge Eating, Compensatory Behaviors, Disinhibited Eating, Emotional Eating, Restraint, Eating, Shape and Weight Concerns, and Night Eating Severity) that are described above and assign each participant a percentile ranking for each scale. Scale scores below the 75th percentile are considered “normal” and are ranked as 0. Scores from the 75th to less than the 90th percentiles are considered above normal and are ranked as 1. Scores at or above the 90th percentile are considered well above normal and are ranked as 2. Using percentile rankings permits even weighting across the nine Eating Behavior scales.

The second step in calculating the Disturbed Eating Severity score is to sum the percentile ranking scores of the nine Eating Behavior scales (possible score range of 0 to 18) and determine the percentiles (i.e., 75th, 90th) of the summed ranking scores. The final step is to assign participants to a disturbed eating severity category (i.e., not disturbed, mildly disturbed, disturbed, and highly disturbed). Those categorized as “not disturbed” have a summed ranking score of 0. Those categorized as “mildly disturbed” have a score above 0 and below the 75th percentile. Those categorized as “disturbed” score above the 75th percentile and below the 90th percentile. Those categorized as “highly disturbed” scored above the 90th percentile. The cut-offs for eating severity categories are based on previous research91, 264, 265 as well as typical percentile categories used in psychological measurements (e.g., a percentile greater than 75 is considered above normal)266.
**CDC Heath-Related Quality of Life-14 (CDC HRQOL-14)**

The CDC HRQOL-14 instrument assesses health-related quality of life. This is a 14-item, 3-module (Healthy Days Core [items 1 to 4], Activity Limitation [items 5 to 9], Healthy Days Symptoms [items 10 to 14]) instrument. A summary index of unhealthy days is calculated by summing the number of days from responses to items 2 and 3, with a logical maximum of 30 unhealthy days. Healthy days index is calculated by subtracting the number of unhealthy days from 30 days. The items in Activity Limitation and Healthy Days Symptoms modules are typically not summed together but scored separately. For this study only 3-items form the Healthy Days Core Module (CDC-HRQOL-4) were retained.

**CDC HRQOL-4 Items**

**Healthy Days Core Module**

1. My health is ______.
   - Excellent
   - Very good
   - Good
   - Fair
   - Poor
   - Don’t know/Not sure

2. Think about your physical health, which includes physical illness and injuries. How many days during the past 30 days has your physical health not been good?
   - Number of days (indicate 0 to 30): _____
   - Don’t know/Not sure

3. Think about your mental health, which includes stress, depression, and problems with emotions. How many days during the past 30 days has your mental health not been good?
   - Number of days (indicate 0 to 30): _____
   - Don’t know/Not sure

**CDC HRQOL-4 Scoring Methodology**

1. Raw data from items 2 and 3 were calculated (i.e., mean and standard deviation) separately for the total number of unhealthy days for physical health and mental health with a logical maximum of only 30 unhealthy days (score range 0 to 30).
2. Raw data from item #1 was analyzed for frequencies and percents.
Demographics
These demographic questions are nominal data that were analyzed as frequencies.

Alternative Diets
1. Currently, do you follow any of these diets? (Check all that apply)
   - Diabetic diet
   - Vegetarian
   - Vegan
   - Gluten-free
   - Lactose-free
   - Peanut-free
   - Other, specify ______
   I do not follow any special diet, Skip to Question 3

2. Was the diet(s) you checked in Question 1 prescribed by a doctor or other healthcare professional?
   - Yes
   - No

Gender
3. What is your gender?
   - Male, Skip to Question 8
   - Female

Female Puberty
4. If female, how many years old were you when you had your first period?
   years of age: ______

5. If female: Over the past 3 to 4 months, how many menstrual periods have you missed?
   months: ______

Pregnancy
6. During the last 3 to 4 months, how many months were you pregnant?
   months: ______

Birth Control Use
7. During the last 3 to 4 months, how many months were you taking birth control pills?
   months: ______

Male Puberty
8. If male, how many years old were you when you noticed your voice starting to change?
   years of age: ______

Age
9. What is your age?
17 or younger
18
19
20
21
22
23
24
25
26
27
28
29
30
31 or older

Race
10. What is your race?
   American Indian or Alaska Native
   Asian
   Black or African American
   Native Hawaiian or other Pacific Islander
   White
   Other race, please specify________
   Two or more races, please specify ______

11. Are you Hispanic or Latino?
   Yes
   No

College Year
12. What year in college are you?
   Freshman
   Sophomore
   Junior
   Senior
   Graduate Student
   Other, specify: ______

College Major
13. What is your major?
   ______ (This data was re-categorized into majors)

Religion
14. What is your religion?
   Protestant
Catholic
Jewish
Muslim
Buddhist
Hindu
Agnostic
None
Other, specify: ________

Self-Reported Height
15. What is your height? *(Converted to meters squared)*
   - less than 5 feet tall
     - 5 feet 1 inch
     - 5 feet 2 inch
     - 5 feet 3 inch
     - 5 feet 4 inch
     - 5 feet 5 inch
     - 5 feet 6 inch
     - 5 feet 7 inch
     - 5 feet 8 inch
     - 5 feet 9 inch
     - 5 feet 10 inch
     - 5 feet 11 inch
     - 6 feet 0 inch
     - 6 feet 1 inch
     - 6 feet 2 inch
     - 6 feet 3 inch
     - 6 feet 4 inch
     - 6 feet 5 inch
     - 6 feet 6 inch
     - 6 feet 7 inch
     - 6 feet 8 inch
     - 6 feet 9 inch
     - 6 feet 10 inch
     - 6 feet 11 inch
     - more than 7 feet tall

Self-Reported Weight
16. What is your weight in pounds? *(Converted to kilograms)*
   ________

*(BMI was calculated using self-reported height and weight—*[Wt (kg)/Ht (m^2)]*"

Weight History
17. How would you describe your weight when you were in 1st grade?
   Very thin
Thin
Average
Slightly heavy
Overweight

18. How would you describe your weight when you were in 6th grade?
   Very thin
   Thin
   Average
   Slightly heavy
   Overweight

19. How would you describe your weight in 10th grade?
   Very thin
   Thin
   Average
   Slightly heavy
   Overweight

**Current Weight Description**
20. How would you describe your weight now?
   Very thin
   Thin
   Average
   Slightly heavy
   Overweight

**Weight Stability**
21. Has your weight remained stable over the past month? *(Within 1 to 2 pounds of usual weight)*
   Yes
   No
   Not sure

22. If you answered NO to Question 21, was this an intentional weight loss or gain?
   Yes
   No
   Not applicable

**Healthy Insurance History**
23. When you were growing up did your family usually have health insurance?
   Yes
   No
   Not sure

24. Do you have health insurance now?
Yes
No

**Diagnosed Conditions by Health Professionals**

25. Has a health professional, such as a doctor or psychologist, ever told you that you have any of these conditions? *(Check all that apply)*

- Type 1 diabetes  if so, what age were you? _____
- Type 2 diabetes  if so, what age were you? _____
- Celiac disease  if so, what age were you? _____
- Chicken Pox  if so, what age were you? _____
- Cystic fibrosis  if so, what age were you? _____
- Measles  if so, what age were you? _____
- Crohn’s disease  if so, what age were you? _____
- Ulcerative colitis  if so, what age were you? _____
- Osteoporosis  if so, what age were you? _____
- Irritable bowel syndrome  if so, what age were you? _____
- Eating Disorder  if so, what age were you? _____

**Family History of Diseases**

26. Does anyone in your immediate family (birth mother, birth father, or siblings) have these medical conditions? *(Check all that apply)*

- Type 1 diabetes
- Type 2 diabetes
- Celiac disease
- Cystic fibrosis
- Crohn’s disease
- Ulcerative colitis
- Osteoporosis
- Irritable bowel syndrome
- Eating Disorder

**Bowel Habits**

27. During the past 3 months or longer, have you had abdominal discomfort or pain that has been relieved by having a bowel movement?

- Yes
- No

28. During the past 3 months or longer, have you had abdominal discomfort or pain that has led to changes in how often you have bowel movements?

- Yes
- No

29. During the past 3 months or longer, has the appearance of your bowel movements changed?

- Yes
- No
Body Image Intense Exposure
30. Please list the 2 TV programs you watch **most** frequently.
   1. __________________
   2. __________________

31. Please list the 2 magazines that you read **most** frequently.
   1. _____________
   2. _____________

32. Please list the 2 websites that you visit **most** frequently.
   1. ____________
   2. ____________

Contact Information
33. Name
   _______________________________________

34. Phone with voice mail (so we can let you know if you won!)
   _______________________________________

35. Email (so we can let you know if you won!)
   _______________________________________

36. How did you learn about this survey? (If you heard about it from a professor, please give the professor’s name.)
   _______________________________________

Illness Behavior Questionnaire (IBQ)

The Illness Behavior Questionnaire (IBQ) is a 62-item, dichotomous yes/no response scale that yields scores on seven scales (i.e., general hypochondriasis, disease conviction scale, psychological versus somatic focusing, affective inhibition, affective disturbance, denial, irritability) that assesses attitudes toward illness (i.e., abnormal illness behavior). The IBQ also assesses patient’s feelings toward the significant persons in his or her life, including physicians, and the patient’s perceptions regarding his or her own psychosocial status (i.e., other items). A total score for the questionnaire may be obtained by counting the responses that represent problems (asterisks). Scores may also be provided for the seven dimensions. High scores suggest maladaptive ways of perceiving, evaluating, or acting in relation to one’s state of health. For this study only a few of the scales were retained (general hypochondriasis, disease conviction scale, psychological versus somatic focusing, affective inhibition, irritability).

IBQ Items

General Hypochondria
1. If you feel ill and someone tells you that you are looking better, do you become annoyed?
2. Are you more sensitive to pain than other people?
3. Are you afraid of illness?
4. Do you think that you worry about your health more than most people?
5. Do you find that you get jealous of other people’s good health?
6. Do you ever have silly thoughts about your health, which you can’t get out of your mind, no matter how hard you try?
7. Are you upset by the way people react to your health condition?
8. Do you often think that you might suddenly fall ill?
9. If a disease is brought to your attention (through the radio, television, newspapers or someone you know) do you worry about getting it yourself?

Disease Conviction
10. Do you think there is something seriously wrong with your body?
11. Does your health condition interfere with your life a great deal?
12. If the doctor told you that they could find nothing wrong with you, would you believe them?*
13. Do you find that you are often aware of various things happening in your body?
14. Are you sleeping well?*
15. Do you find that you are bothered by many different symptoms?

Psychological vs Somatic Perception of Illness
16. Do you think that your symptoms may be caused by worry?
17. Is your bad health the biggest difficulty of your life?
18. Do you think there is something the matter with your mind?
19. Are you bothered by many pains and aches?
20. Do you ever think of your current health condition as a punishment for something you have done wrong in the past?
Affective Inhibition
21. Can you express your personal feelings easily to other people?*
22. When you are angry, do you tend to bottle up your feelings?
23. Do you prefer to keep your feeling to yourself?
24. Is it easy for you to let people know when you are cross with them?*
25. Is it hard for you to show people your personal feelings?

Irritability
26. Do you often find that you lose patience with other people?
27. Are you more irritable towards other people?
28. Do you find that you get angry easily?
29. Are you easy to get along with when you are feeling sick?*
30. Does your current health condition affect the way you get along with your family or friends a great deal?

IBQ Scoring Methodology
1. Raw data from each scale were recoded (1=Yes, 0=No). Items with an asterisk were reverse coded (0=Yes, 1=No).
2. Recoded raw data were summed and averaged for each scale with higher mean scores indicating greater abnormal illness behaviors.
3. Items that are highlighted yellow are only questions used in the disease specific follow-up surveys (i.e., diabetes, celiac disease, cystic fibrosis, IBS/IBD).
**Brief COPE** The Brief COPE instrument is a 28-item, 4-point Likert scale, that assesses problem focused and emotional focused coping constructs from the Transactional Model of Stress and Coping. The following scales that are part of the Brief COPE: active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame. For this study all scales were used except for the 2-items from the instrumental support scale.

**Brief COPE Items**

**Active Coping Scale**
1. I concentrate my efforts on doing something about the situation.
2. I take action to try to make the situation better.

**Planning Scale**
3. I try to come up with a strategy about what to do.
4. I think hard about what steps to take.

**Positive Reframing Scale**
5. I try to see it in a different light, to make it seem more positive.
6. I look for something good in what is happening.

**Acceptance Scale**
7. I accept the reality of the fact that it has happened.
8. I learn to live with it.

**Humor Scale**
9. I make jokes about it.
10. I make fun of the situation.

**Religion Scale**
11. I try to find comfort in my religion or spiritual beliefs.
12. I pray or meditate.

**Emotional Support Scale**
13. I get emotional support from others.
14. I get comfort and understanding from someone.

**Self-Distraction Scale**
15. I turn to work or other activities to take my mind off things.
16. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.

**Denial Scale**
17. I say to myself “this isn’t real.”
18. I refuse to believe that it has happened.

**Venting Scale**
19. I say things to let my unpleasant feelings escape.
20. I express my negative feelings.

**Substance Abuse**
21. I use alcohol or other drugs to make myself feel better.
22. I use alcohol or other drugs to help me get through it.

**Behavioral Disengagement**
23. I give up trying to deal with it.
24. I give up the attempt to cope.

Self-Blame Scale
25. I criticize myself.
26. I blame myself for things that happened.

Brief COPE Scoring Methodology
1. Raw data were recoded from a 1-4 to 0-3 (i.e., 0=I usually don’t do this at all, 1=I usually do this a little bit, 2=I usually do this a medium amount, 3=I usually do this a lot).
2. Data were averaged for a total score in each scale (score range 0 to 3).
3. Items 7, 16, 19 and 24 were deleted from analysis, as their factor loadings were low.
Health Specific Nutrition Self-Efficacy

The Health-Specific Nutrition Self-Efficacy instrument is a 5-item, 4-point Likert scale (very uncertain, rather uncertain, rather certain, and very certain) that assesses the self-efficacy construct from the Social Cognitive Theory.

Health Specific Nutrition Self-Efficacy Items

1. I can manage to stick to eating healthy foods, even if I need a long time to develop the necessary routines.
2. I can manage to stick to eating healthy foods, even if I have to try several times until it works.
3. I can manage to stick to eating healthy foods, even if I have to rethink my entire way of eating.
4. I can manage to stick to eating healthy foods, even if I do not receive a great deal of support from others when making my first attempts.
5. I can manage to stick to eating healthy foods, even if I have to make a detailed plan.

Health Specific Nutrition Self-Efficacy Scoring Methodology

1. Raw data for each item are assigned a score of 1, 2, 3, or 4 to the answer choices very uncertain, rather uncertain, rather certain, and very certain respectively.
2. Scores for all items are summed for an overall score. Higher scores indicate greater nutrition self-efficacy (score range 4 to 20).
Quality of Life (QOL)
The following 35-item, 5-point Likert scale, disease specific QOL instrument for type 1 diabetes, celiac disease, cystic fibrosis and IBS/IBD was developed based of the following validated and reliable QOL instruments (diabetes quality of life brief clinical inventory, celiac disease questionnaire, cystic fibrosis QOL questionnaire, short inflammatory bowel disease questionnaire, IBS-QOL).

QOL Items
Dysphoria/Emotional
1. During the past few weeks, how often has your diabetes made you feel depressed?
2. During the past few weeks, how often has your diabetes made you feel angry?
3. During the past few weeks, how often has your diabetes made you feel irritable?
4. During the past few weeks, how often has your diabetes made you feel anxious?
5. During the past few weeks, how often has your diabetes made you feel frustrated?
6. During the past few weeks, how often has your diabetes made you feel helpless?
7. During the past few weeks, how often has your diabetes made you feel isolated?
8. During the past few weeks, how often has your diabetes made you feel like you are losing control of your life?
9. During the past few weeks, how often has your diabetes made you feel like your life revolves around your diabetes?
10. During the past few weeks, how often has your diabetes made you feel like life is less enjoyable?

Interference with Activity of Physical Functioning
11. During the past few weeks, my diabetes affected the time I was able to spend doing light tasks like preparing a snack or walking around.
12. During the past few weeks, my diabetes affected the time I was able to spend doing vigorous activities like exercising or sports.
13. During the past few weeks, my diabetes has made me feel tired and sluggish.
14. During the past few weeks, my diabetes kept me from getting as much done as I would have liked.
15. During the past few weeks, my diabetes has caused me to feel physically ill.
16. During the past few weeks, my diabetes has prevented me from going places I wanted to go.
17. During the past few weeks, my diabetes has prevented me from doing things I wanted to do.
18. During the past few weeks, my diabetes caused me to miss work or school.

Food Avoidance
19. During the past few weeks, my diabetes has made me feel frustrated because I could not eat when I wanted.
20. During the past few weeks, my diabetes has made me feel frustrated because I could not eat the kinds of foods I wanted.
21. During the past few weeks, my diabetes has made me feel frustrated because I could not eat the amount of food I wanted.
Body Image
22. During the past few weeks, my diabetes has made it difficult for me to keep my weight where I’d like it to be.
23. During the past few weeks, my diabetes has limited what I can wear.

Relationship/Social Interference
24. During the past few weeks, I have been embarrassed by having to use insulin.
24. During the past few weeks, I have been embarrassed by needing to be near a bathroom or the smell caused by my bowel problem. (Celiac Disease & IBS/IBD)
24. During the past few weeks, I have been embarrassed by my coughing or breathlessness. (Cystic Fibrosis)
25. During the past few weeks, I think I irritated others because of what I need to do to control my diabetes.
26. During the past few weeks, my diabetes has interfered with me having satisfactory intimate relationships.
27. I am concerned that my diabetes is stressful for those who are close to me.
28. I often eat something I shouldn’t rather than tell people I have diabetes.
29. My diabetes has made it difficult for me to be around people I do not know well.
30. I find that my friends don’t always understand the limits that my diabetes places on me.

Health worry/Future Concern
31. I worry that my diabetes will limit my future career.
32. I worry that my diabetes will get worse.
33. I worry my blood sugar will drop and cause me to pass out. (type 1 diabetes)
33. I worry that I will need a heart-lung transplant. (cystic fibrosis)
33. I worry about losing control of my bowels. (celiac disease & IBS/IBD)
34. I worry that my diabetes will shorten my life.
35. I worry that because of my diabetes I will never be able to lead an independent life.

QOL Scoring Methodology
1. Raw data for Items 1-17 were scored as follows: all the time=1, often=2, sometimes=3, seldom=4, never=5. Items 18-34 were scored as follows: strongly agree=1, agree=2, neither=3, disagree=4, strongly disagree=5).
2. Data are summed and averaged for each scale with higher scores indicating poorer quality of life. Summing all mean scale scores and dividing by six calculates a mean global score.
3. Items highlighted in yellow are phrased differently depending on the disease specific survey and calculated scores are still the same.
Demographics Disease Specific & Cognitive Behavior Follow-Up Surveys
These demographic questions are nominal data that were analyzed as frequencies. Items that are highlighted in yellow are disease specific items that may differ between healthy participants and other diseased participants.

**Age of Diagnosis**
1. At what age were you first diagnosed with Type 1 diabetes?
   1. year or less
   2. years
   3. years
   4. years
   5. years
   6. years
   7. years
   8. years
   9. years
  1.0 years
  1.1 years
  1.2 years
  1.3 years
  1.4 years
  1.5 years
  1.6 years
  1.7 years
  1.8 years
  1.9 years
  2.0 years
  2.1 years
  2.2 years
  2.3 years
  2.4 years
  2.5 years or older

**Medical Complications**
2. Have you had any serious medical complications with Type 1 diabetes after being diagnosed?
   Yes
   No, Skip to Question 5

3. If YES to #2, at what age did you have your last serious medical complication caused by Type 1 diabetes?
   1. year or less
   2. years
   3. years
   4. years
4. What was the medical complication? (Briefly describe below)

5. When did you last have your Hemoglobin A1C checked? (Type 1 Diabetes Question Only!)
   Month and Year of last Hemoglobin A1C: _________
   Never
   Don’t remember/Unsure

6. What was your Hemoglobin A1C level at this check-up? (Type 1 Diabetes Question Only!)
   Less than 5.0%
   Between 5.0-6.0%
   Between 6.1-7.0%
   Between 7.1-8.0%
   Between 8.1-9.0%
   Between 9.1-10%
   Greater than 10.1%
   Don’t know/Unsure
   Not applicable

First Diagnosed Healthcare Visits
7. When you were first diagnosed with Type 1 diabetes, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your condition?
   Never
   About 1 time per week
About 1 time per month
About every 3 months
About every 6 months
About 1 time per year
Not sure/ can’t remember
Other (please specify: __________)

8. When first diagnosed with Type 1 diabetes, which of these healthcare professionals did you visit at least 2 times per year? (Check all that apply)
   General Physician
   Endocrinologist
   Nurse
   Registered Dietitian
   Psychologist
   Gastroenterologist
   Ophthalmologist (Eye doctor)
   Podiatrist (Foot doctor)
   None of the above
   Other, Specify:
   Not sure/can’t remember

9. When you were first diagnosed with Type 1 diabetes, how would you describe your relationship with your healthcare team?
   Very good
   Good
   Okay
   Bad
   Very bad
   Not sure/can’t remember

10. When first diagnosed with Type 1 diabetes, how would you describe your communication with your healthcare team?
    Very good
    Good
    Okay
    Bad
    Very bad
    Not sure/can’t remember

11. When first diagnosed with Type 1 diabetes, how often did the cost of medicine keep you from following your healthcare team’s advice?
    All the time
    Often
    Sometimes
    Seldom
    Never
Not sure/can’t remember

12. When first diagnosed with Type 1 diabetes, how often did the cost of specialized food keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never
   Not sure/can’t remember

13. When first diagnosed with Type 1 diabetes, how satisfied were you with your diabetes treatment?
   Very satisfied
   Satisfied
   Neither Satisfied nor Dissatisfied
   Dissatisfied
   Very dissatisfied
   Not sure/can’t remember

**Current Healthcare Professional Visits for Diagnosis**
14. Currently, which of these healthcare professionals do you visit at least 2 times per year? *(Check all that apply)*
   General Physician
   Endocrinologist
   Nurse
   Registered Dietitian
   Psychologist
   Gastroenterologist
   Ophthalmologist (Eye doctor)
   Podiatrist (Foot doctor)
   None of the above
   Other, Specify:
   Not sure/can’t remember

15. Currently, how would you describe your relationship with your healthcare team?
   Very good
   Good
   Okay
   Bad
   Very bad
   Not applicable

16. Currently, how would you describe your communication with your healthcare team?
   Very good
   Good
Okay
Bad
Very bad
Not applicable

17. Currently, how often does the cost of medicine keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

18. Currently, how often does the cost of specialized food keep you from following your healthcare team’s advice?
   All the time
   Often
   Sometimes
   Seldom
   Never

19. Currently, how satisfied are you with your diabetes treatment?
    Very satisfied
    Satisfied
    Neither Satisfied nor Dissatisfied
    Dissatisfied
    Very dissatisfied

**Dietary Compliance**
20. Do you follow a diabetic diet?
    Yes
    No, Skip to Question 121
    Choose not to answer, Skip to Question 121

21. If YES to #20, how closely are you able to follow the diabetic diet?
    Very closely
    Closely
    Somewhat closely
    Not closely
    Not closely at all

**Healthcare Visits in Past Year**
22. During the last year, about how often did you see a doctor, nurse, dietitian, or other healthcare professional regarding your diabetes?
    Never
    About 1 time per week
About 1 time per month
About every 3 months
About every 6 months
About 1 time per year
Other (please specify: ________)

Registered Dietitian Visits
23. Have you ever seen a Registered Dietitian (someone who helped you plan a diet to manage your diabetes)?
Yes
No, Skip to Question 25
Not sure/can’t remember, Skip to Question 25

24. If YES to #23, in the last year, how often have you seen a Registered Dietitian?
Never
About Once a month
About 6 times per year
About 3 times per year
About 1 time per year
About every two years
Other (please specify: ________)

Eating Disorder Information
25. Has a healthcare professional ever given you information about eating disorders?
Yes
No, Skip to Question 27
Not sure/can’t remember, Skip to Question 27

26. If YES to #25, please check below all who gave you information about eating disorders after you were diagnosed with your diabetes. (Check all that apply)
General Physician
Endocrinologist
Nurse
Registered Dietitian
Psychologist
Gastroenterologist
Ophthalmologist (Eye doctor)
Podiatrist (Foot doctor)
Other, specify ________
Not sure/can’t remember

Knowledge and Satisfaction
27. How knowledgeable are you about Type 1 diabetes?
Very knowledgeable
Knowledgeable
Somewhat knowledgeable
Not knowledgeable
Not knowledgeable at all

28. How satisfied are you with your knowledge of Type 1 diabetes?
   Very satisfied
   Satisfied
   Neither satisfied nor dissatisfied
   Dissatisfied
   Very dissatisfied

**Contact Information**
29. Name

30. Email (so we can contact you if you won!)

31. Phone with voice mail (so we can contact you if you won!)
Appendix G
Validation of Matched Case-Control Diet-Related Chronic Health Condition (DRCHC) Participants

Mean and Frequency of Demographic Characteristics for Matched Case-Control DRCHC* Participants

<table>
<thead>
<tr>
<th>Characteristic (possible score range)</th>
<th>DRCHC Participants (Cases) All (N=164)</th>
<th>Healthy Participants (Controls) All (N=656)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index (Wt [kg]/Ht [m²])</td>
<td>22.64±3.64</td>
<td>22.63±3.63</td>
<td>0.9899†</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>126 (77)</td>
<td>504 (77)</td>
<td>&gt;0.9999†</td>
</tr>
<tr>
<td>Male</td>
<td>38 (23)</td>
<td>152 (23)</td>
<td></td>
</tr>
</tbody>
</table>

*DRCHC=Diet-Related Chronic Health Condition, SD=Standard Deviation
†Independent Sample t-test
†Fisher’s Exact t-test
Appendix H
Disturbed Eating Severity Prediction Model Items

Depression Scale Items:
1. **During the past 2 weeks**, I have had little interest or pleasure in doing things.
   Not at all
   Several days
   More than half the days
   Nearly every day

2. **During the past 2 weeks**, I have felt down, depressed, hopeless.
   Not at all
   Several days
   More than half the days
   Nearly every day

3. **During the past 2 weeks**, I have trouble falling or staying asleep.
   Not at all
   Several days
   More than half the days
   Nearly every day

4. **During the past 2 weeks**, I have felt tired or had little energy.
   Not at all
   Several days
   More than half the days
   Nearly every day

5. **During the past 2 weeks**, I have had a poor appetite or have overeaten.
   Not at all
   Several days
   More than half the days
   Nearly every day

6. **During the past 2 weeks**, I have felt bad about myself---or that I am a failure
   and/or have let my family or myself down.
   Not at all
   Several days
   More than half the days
   Nearly every day

7. **During the past 2 weeks**, I have had trouble concentrating on things, such as
   reading the newspaper or watching television.
   Not at all
   Several days
   More than half the days
Nearly every day

8. **During the past 2 weeks, I have moved or spoken so slowly that other people could notice. Or the opposite—I have been so fidgety or restless that I have been moving around a lot more than usual.**
   - Not at all
   - Several days
   - More than half the days
   - Nearly every day

**Pressure from Media Items:**
9. **I have felt pressure from TV or magazines to have a perfect body.**
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly disagree

10. **I do not compare my body to the bodies of people who appear in magazines.** (item reverse coded)
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

11. **I have felt pressure from TV or magazines to lose weight.**
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

12. **I have felt pressure from TV and magazines to be thin.**
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly disagree

**Dichotomous Thinking Item:**
13. **I think of food as either “good” or “bad.”**
    - Definitely False
    - Mostly False
    - Mostly True
    - Definitely True
Virginia M. Quick, PhD, RD

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9/06-5/11 Rutgers University, Graduate School of New Brunswick
Nutritional Sciences Graduate Program, PhD

8/05-5/06 College of Saint Elizabeth, Dietetic Internship

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➢ PUBLICATIONS: JOURNAL ARTICLES


Quick, V. Disturbed Eating Behaviors in Youth with Type 1 Diabetes. *The Research Digest Newsletter.* Summer-Fall 2010; 45(3):15-16.


Byrd-Bredbenner, C.; Maurer Abbot, J.; and Quick, V. Food Safety Knowledge and Beliefs of Middle School Children: Implications for Food Safety Educators. *Journal of Food Science Education.* January 2010; 9(1):19-30.


➤ **PUBLICATIONS: BOOKS AND BOOK CHAPTERS**


➤ **PUBLICATIONS: PUBLISHED ABSTRACTS**


Quick, V., Corda, KW., Byrd-Bredbenner, C. Kitchen Ninja (KN) to the Rescue: Development and Formative Evaluation of a Food Safety (FS) Education Game Targeting Middle School Youth. (Accepted for July 2011) Society for Nutrition Education, Kansas City, KS.


