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Nutritional Analyses of Intuitive Eaters as Compared to Dieters

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NUTRITIONAL ANALYSES OF INTUITIVE EATERS

AS COMPARED TO DIETERS

by

Anne Wilson Banks

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ABSTRACT

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Utah State University, 2008

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Rates of obesity in the United States have been increasing despite an increase of dieters. A new paradigm, intuitive eating, has been introduced to counter the negative effects of dieting. Intuitive eating has not been compared to dieters on a nutritional level, however. The main purpose of this study was to determine the nutritional differences between intuitive eaters and dieters.

Participants were asked to complete questionnaires regarding food consumption and attitudes about eating. Participants ($N = 32$) were then classified as intuitive eaters or dieters and asked to complete six, 24-hr food logs. Data received from these food logs were compared based on group classification to determine statistical significance.

The results of the *t*tests did not determine statistical significance between groups regarding food consumption ($p > .05$). A chi-square test used to determine if intuitive eaters consumed within 100 kilocalories of their recommended level of calorie consumption was found to be statistically significant ($p < .05$).

(122 pages)

DEDICATION

I would like to dedicate this thesis first of all to Dr. Julie Gast, whose untiring help made this final work possible. Also, I would like to thank my committee members for their encouragement and providing me with their experience and knowledge.

Most importantly I would like to dedicate this work to my family. To my husband, Michael, for his acceptance of my divided attention while I was in the process of finishing. To my son, Andrew, for providing me the deadlines and the determination to finish. To my parents, Ben and JaNeil, for encouraging me from my earliest years to achieve great things and instilling in me a love of education. And finally, to all my other family and friends, too numerous to list in their entirety, for your unending love and support without which I could not have finished.

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CHAPTER I

INTRODUCTION

Problem Statement

Diet. The first three letters of this word represent the end of life. Yet dieting, a restriction of food intake for the desired effect of reducing body weight (McFarlane, Polivy, & McCabe, 1999), is one of the most commonly attempted methods of weight-loss in the United States (Neumark-Sztainer, Story, Hannan, Perry, & Irving, 2002). Research has been done to improve long-term maintenance of success during dieting (Curinoi & Lourenco, 2005; Jeffery et al., 2000; Jehn, Patt, Appel, & Miller, 2006), to decrease the obesity rates of Americans (Story, 1999; Suskind et al., 2000), and to increase the nutritional value of the intake in the average American diet (Guo, Warden, Paeratakul, & Bray, 2004). However, the prevalence of obesity is still increasing throughout the United States with over two-thirds of the American population considered overweight or obese (Centers for Disease Control [CDC]n.d.).

Studies have found that individuals who initially lose weight through dieting regain that weight as a result of binging after cessation of the diet within a short amount of time. This is defined as weight cycling (Field, Manson, Taylor, Willett, & Colditz, 2004). Recent research has been done to determine the long-term health effects of weight cycling (Field, Wing, Manson, Spiegelman, & Willett, 2001; Korkeila, Rissanen, Kaprio, Sorensen, & Koskenvuo, 1999). These findings have shown that an individual who begins a diet with the intention of losing weight, is more likely to regain the weight they lost while on the diet within a short amount of time after the diet is completed. This

time period can be as little as 6 months or up to a year, but the majority of dieters do regain the weight (Field et al., 2004). As a result, the individual weighs more than before they began the diet. Diets do not only affect physiological measures for individuals, the psychological effects must also be taken into consideration.

Many studies have researched the physiological and psychological effects of dieting. Franklin, Schiele, Brozek, and Keys (1948) reported many of these effects in their landmark research regarding 36 healthy young men. Their findings included significant weight loss among participants, as well as physical and psychological discomforts. Other studies have reported similar findings with regard to the physical and psychological discomforts of dieting (Bacon et al., 2002; Cameron, 1999; Daee, et al., 2002; McFarlane, et al., 1999; Polivy & Herman, 1999).

There are other negative side effects of dieting in addition to the weight cycling and the physiological and the psychological effects of dieting. For many individuals, diets are not successful at helping them lose weight (Jeffery et al., 2000). In some cases if an individual is successful at losing weight, it is only for a short period of time. Jeffery and colleagues discussed several observational studies in a review of the literature that had been conducted to determine long-term maintenance rates of individuals who had lost 10% or more of their initial body weight. One study in this literature review assembled a registry containing 2500 individuals who had maintained an average weight loss of 50 pounds for five or more years. These results demonstrated that weight loss is achievable and maintainable. In a different study there were as few as 2% of a large population (exact sample size not provided) that maintained a 10% weight loss from the age of 30 years until they were 50 years.

Reasons for the failure of many diets in the research literature include inconsistency in length of the interventions, length of the follow-up, and components of the intervention (Kahan, Polivy, Herman, 2003; McFarlane, Polivy, McCabe, 1999; Story, 1999). It is not as common for researchers to develop long-term interventions for participants (Jeffery et al., 2000).

A new strategy, intuitive eating, involves eating according to physiological cues, rather than eating according to a food or calorie restrictive diet or for reasons that are not physiological (e.g., emotional, or social reasons) (Gast & Hawks, 2000). Intuitive eating proponents hypothesize that this paradigm may help individuals achieve a healthy weight. In addition, this may lead to long-term weight loss without the negative effects associated with dieting (Gast & Hawks). Another claim of this strategy is that when individuals are able to choose freely, their choices will consist of nutritious, healthy foods (Hawks, Madanat, Hawks, & Harris, 2005). With diets, there are many nutritional restrictions; a tendency to binge follows these restrictive periods. As a result dieters are not consistently eating nutritiously (Hawks et al.).

Because intuitive eating is a new weight loss paradigm, empirical research needs to be conducted to determine its long-term effects. Preliminary studies have determined that intuitive eating has less of the adverse psychological and physiological effects as dieting. Unfortunately, it has not been established whether intuitive eaters do eat healthier than dieters.

Purpose of the Study

Intuitive eating has been proposed as an alternative to dieting. However, research has not been done to determine if participants who engage in intuitive eating are eating healthier or more nutritiously when compared to dieters. Moreover, it is not known if intuitive eaters can maintain this eating pattern. If intuitive eating is going to be recommended by health educators, nutritionists, and dieticians, it is imperative to know if intuitive eaters are eating more nutritiously than dieters and if they are consistent in their eating behaviors. The purpose of this study was to determine the nutritional differences between intuitive eaters and dieters based on intake levels of fruits, vegetables, fats, simple sugars, and sodium.

Research Questions

Based on the recommended food intake from the Dietary Guidelines for Americans (U.S. Department of Health and Human Services [USDHHS] & U.S. Department of Agriculture [USDA], 2005) this study addressed the following research questions:

1. Are participants who eat intuitively eating more fruits than dieters?
2. Are participants who eat intuitively eating more vegetables than dieters?
3. Are participants who eat intuitively consuming fewer calories from fats than dieters?
4. Are participants who eat intuitively consuming fewer calories from simple sugars than dieters?

5. Are participants who eat intuitively consuming less sodium than dieters?
6. Are participants who eat intuitively consuming and not exceeding their recommended caloric intake when compared to dieters?

Significance for Health Education

As the intuitive eating model becomes more ubiquitous in the health education literature, a nutritional analysis of intuitive eaters is needed to determine the long-term health implications of eating according to this paradigm. Research has shown that unhealthy dietary patterns are associated with long-term health risks, while healthy dietary patterns can be a protective factor (Newby et al., 2003). Before applying this paradigm in clinical settings, the health benefits must be weighed. This study provides initial answers to these questions. Better health education may be available in terms of weight management as the population becomes more aware of the intuitive eating paradigm and its nutritional concepts.

Delimitations of the Study

Participants who scored below the mean on the Intuitive Eating Scale were included in the dieting group, while participants who scored above the mean were included in the intuitive eating group. Male and female participants were between the ages of 18 and 65 years, speak English, and were members of the community of Cache County. The study did not focus on interventions or on teaching participants how to eat intuitively. The main focus of this study was to understand the differences between dieters and intuitive eaters.

Limitations of the Study

The participants consisted of a non-randomized, volunteer sample. As a result of this sample, the results may not be generalizable to larger populations.

Assumptions

In this study it is assumed that intuitive eating can be a learned process and that eating habits are learned. It is also assumed that individuals consistently eat according to their eating patterns. Moreover, it was assumed that reported food intake was representative of the participants' average food intake and that participation in the study has not altered their normal eating habits.

Definition of Terms

Intuitive Eating - A person who eats in response to physiological cues and stops eating when satiated and who does not restrict any foods from their diet for the purpose of weight loss.

Healthy Eating - A participant who eats according to the guidelines of the dietary guidelines for Americans including a minimum of five fruits or vegetables a day, two to three servings of protein, two to three servings of dairy, 6 to 11 servings of grain, less than 30 % of total calories from fats, limiting sugar intake, less than 1,500 mg of sodium per day, and not exceeding their recommended caloric intake (USDHHS & USDA, 2005).

Consistency – An intuitive eater or non-intuitive eater who eats according to their specified category throughout the period of the study, (e.g., an intuitive eater does not resort to restriction of calories or foods on specific days for the purpose of weight loss).

Dieter—An individual who restricts specific foods or daily caloric intake with the intention to lose weight.

Eating Patterns—The typical foods included in the individual's regular eating habits.

Diet—A specific eating pattern designed to help an individual lose weight.

Summary

This chapter discussed dieting and its limitations. An alternative to dieting, intuitive eating, has been introduced. Delimitations, limitations, and assumptions of the present study were also discussed. The purpose of this study was stated. Definitions of terms that will be used in this research were given. The next chapter will provide a review of the literature regarding dieting, intuitive eating, and long-term effects of eating patterns.

CHAPTER II

REVIEW OF LITERATURE

Introduction

To fully understand the implications of dieting, intuitive eating, and the effect of dietary patterns on long-term physical and psychological health, one must understand the research that has been done previously to address these questions. This chapter will provide rationale for the present study and review the literature associated with the following topics: (a) definitions of dieting and intuitive eating; (b) physiological consequences of dieting; (c) psychological consequences of dieting; (d) physiological consequences of intuitive eating; (e) psychological consequences of intuitive eating; and (f) long-term implications regarding the individual's future health condition associated with their dietary patterns.

Definitions of Dieting and Intuitive Eating

Dieting has been operationally defined in different ways. For example, McFarlane and colleagues (1999) defined dieting as a restriction of total caloric intake or specific foods with the desired effect of losing weight. There are several different types of diets found in the research literature. For example, Suskind and colleagues (2000) placed participants on a protein-sparing fast. In this type of diet the individual eats approximately 600-800 calories, 2 g/kg protein with small amounts of carbohydrates and supplements. Other diets are categorized as Very-Low-Calorie (VLCD) or Low-Calorie (LCD) (Baker, 2006; Jeffery et al., 2000). As the name implies, these types of diets are

specifically restricting the total amount of caloric intake per day. Very-Low-Calorie-Diets restrict the individual's daily caloric intake to a range of 600-800 calories per day, Low-Calorie Diets restrict daily caloric intake to a range of 1,000-1,200 kilocalories (Baker; Jeffery et al.). In a review of the literature regarding available diets, Baker discussed several other diets that have been researched with the intent to help individuals lose weight. Diets that were included in this review were very-low-calorie, low-calorie, low-fat, very-low-fat, moderate-fat/low-calorie, low-carbohydrate/high-protein. Low-fat and very-low-fat diets were defined as a restriction of fat intake to 20-30% from total daily caloric intake and 15% of daily caloric intake from fat, respectively. The moderate-fat/low-calorie diet was defined as allowing up to 35% of total daily caloric intake from fat but restricting carbohydrates and proteins. The low-carbohydrate/high-protein diet was defined as 20-90 g of carbohydrates without limiting fat or protein intake. Baker reported that regardless of the diet intervention used by these different types of diets, the maintenance of weight loss was still not significant at follow-up periods.

Another term used often in the research literature is a consequence of dieting called yo-yo dieting, or weight cycling. This is associated with dieting, however, contains the aspect of losing a large amount of weight several times, with weight regain occurring shortly after the initial weight loss (Field et al., 2001, 2004; Korkeila et al., 1999).

To operationally define intuitive eating one must consider several components. Intuitive eating is defined by Hawks and colleagues (2005) as an individual who does not restrict any food groups or total caloric intake. Other studies have also utilized this definition (Bacon et al., 2002; Gast & Hawks, 2000; Smith & Hawks, 2006; Tanco,

Linden, & Earle, 1998). Gast and Hawks defined intuitive eating as an individual who eats according to physiological cues. These are the only two definitions of intuitive eating found in the literature.

For purposes of this study the definition of a dieter will be an individual who restricts certain foods or total daily caloric intake and who does so mainly for the purpose of losing weight. An intuitive eater will be defined as an individual who does not restrict any foods or total daily caloric intake for the purpose of weight loss and who eats for the physiological reason of hunger.

Physiological Consequences of Dieting

Dieting behaviors have been associated with weight loss for several decades. In a landmark study by Franklin, and colleagues (1948) participants were subjected to a dieting program for three months in one of the earliest studies designed to determine the effects of a reduced calorie diet on the physiological functions of the human body. The participants were 36 healthy young men between the ages of 20 and 33 years who consumed an average daily intake of 1570 kilocalories during the study period. The participants lost a substantial amount of body weight, 24% of their baseline weight. However, the participants had numerous negative physiological consequences as a result of this diet regiment. These physiological changes ranged from wasting of muscle, to a loss of hair. The participants' heartbeats and metabolic rates slowed as a result of the reduced food intake. While these effects of decreased intake seem extreme, several studies today place obese and overweight individuals on a diet promoting less caloric

intake than in this study (Baker, 2006; Curioni & Lourenco, 2005; Dansinger, Gleason, Griffith, Seller, & Schaefer, 2005; Stotland & Larocque, 2005).

There are other less aversive physiological consequences of dieting. This section will discuss the following physiological consequences of dieting from recent research. These consequences include: weight loss, decreased biometric indicators such as, cholesterol and blood pressure, and weight-loss maintenance.

Weight Loss

The purpose of dieting is to lose weight. There have been several studies conducted to determine effective methods of helping individuals lose weight. The following section will discuss these studies and their effectiveness in helping individuals lose weight.

Suskind and colleagues (2000) conducted a study utilizing the protein-sparing-modified fast diet to facilitate weight loss. Participants in this study were obese children and adolescents enrolled in a weight loss program. The intervention took place over 10 weeks, with participants living at the research center for the period of the study. These participants were given 600-800 calories per day and monitored according to weight loss as well as lipid profiles, and fitness levels (by VO_2 max). As noted above, a 600-800 kilocalories per day diet is considered a very low calorie diet. The researchers reported a successful study as the participants lost significant ($p < 0.0001$) amounts of weight from baseline to the tenth week of the study. However, these results were not maintained at the 9-month follow-up, indicating that VLC diets may not have long lasting weight loss effects.

Similar findings as the Suskind et al. (2000) study, were reported in a review of the literature on the psychological and physiological effects of dieting by Daee and colleagues (2002). Several studies discussed in this literature review reported moderate dieters (individuals who do not participate in vomiting, diet pills, and extreme calorie-restriction) were able to lose weight and participated in healthier behaviors such as exercise and a decrease in high-fat or high-sugar foods. Another study reviewed in this article reported obese adolescents were able to maintain normal maturation while decreasing body weight.

Miller and colleagues (2002) conducted a study to determine the effects of an intensive lifestyle program designed at helping obese and overweight adults lose weight. The intensive lifestyle program was administered to the 44 male and female participants over 9 weeks. Components of this program included the Dietary Attempts to Stop Hypertension (DASH) diet and exercise program. The DASH diet encourages participants to eat a rich supply of fruits, vegetables, and low-fat dairy products, it also restricts saturated fats, total fats, and cholesterol and sodium. The intensive lifestyle participants were compared to a monitoring group. The monitoring group was not submitted to the DASH diet, instead they were taught nutrition and lifestyle counseling over three sessions that occurred after data collection. Specifics of these sessions were not provided. Results indicated that participants in the intensive lifestyle program lost a significant amount of weight at the end of the nine weeks as compared to the monitoring group ($m = 4.9$ kg; $p < .001$). The monitoring group did not lose a significant amount of weight from baseline to the end of the study.

Teixeira and colleagues (2004) also found success in assisting individuals in losing weight, in a study completed to determine effects of a weight loss intervention program for obese and overweight individuals. Among the initial 158 women who participated in the study, 47 did not continue through the end of the 16-week intervention period. During this intervention period, the participants met in groups of about 25, once a week for 150 min. During these meetings the participants were taught about self-monitoring, self-efficacy enhancement, cognitive restructuring, relapse prevention and problem solving techniques, stress management, and prevention of emotional eating. A secondary aim of these meetings was to provide participants with social support. There was no control group for this study. At the baseline of the study participants were measured according to physiological and psychological factors. The physiological measurements that were taken included: height, weight, body fat percentage, exercise history, and dietary intake. The psychological measurements obtained included: the Beck's Depression Inventory, the Rosenberg's Self-Esteem Questionnaire, the Self-Motivation Inventory, and the Self- Efficacy for Exercise Behaviors Scale.

At the conclusion of the 16-week intervention, participants were categorized as successful or non-successful based on the amount of weight they had lost. Successful participants (n = 53) lost 5% or more of their baseline weight, non-successful participants (n = 71) lost less than 5% of their baseline weight, this category included participants who did not complete the entire 16-week intervention. Among all participants who completed the intervention, an average of 5.1 kg had been lost from baseline at the end of the 16 weeks. For participants in the successful weight loss group,

average weight loss was 9.5 kg from baseline. Participants in the nonsuccessful group gained an average of 0.8 kg from baseline. These results were not significantly different for either group from baseline to completion, or when compared with the other group. Analyses were run to determine baseline differences between the two groups. There was a statistically significant difference in baseline weights between successful and non-successful participants, successful participants initially weighed less than non-successful participants. Other significant ($p < .05$) baseline predictors between successful and non-successful participants included: higher body fat percentage among non-successful participants, lower time among non-successful participants spent exercising per day, less total caloric intake among non-successful participants per day, more frequent reports of dieting in the past year among non-successful participants ($p < .001$), more reports of binge eating among non-successful participants, more body dissatisfaction among non-successful participants.

Stotland and Larocque (2005) studied the effects of an early change in Body Mass Index (BMI, ratio of height and weight) and VLCD or LCD in obese individuals. Participants enrolled in the study ($n = 344$) were given the choice of adhering to a VLCD or LCD. The participants were instructed and monitored over the course of the study by their primary physician. These physicians were instructed by the researchers in regards to providing instructions and measurements to the participants. Participants were responsible for making arrangements about follow-up visits with their physician, it was suggested that participants meet weekly with the physician for the first two months of the study, subsequent visits were not required but encouraged. Participants were followed for 9 months in regards to BMI change and psychological factors. At baseline

participants completed the LOQ-UE questionnaire with subscales in depression, stress response and perfectionism. These psychological variables were used to predict ongoing weight loss after the first month. Results indicated that participants who were enrolled in the VLCD, and decreased BMI by 2.1 units during the first month, were significantly ($p < .001$) inclined to continue losing weight through the rest of the study in comparison to participants enrolled in the LCD and had not decreased BMI during the first month.

These studies indicate that there are successful methods to assist people in losing weight. This weight-loss is more than just for appearance benefits. For several individuals this weight loss may provide a decrease in health risks such as lowering blood pressure, and decreasing LDL cholesterol levels.

Decrease of Biometric Indicators

Another positive aspect of dieting found in the research literature is a decrease of biometric indicators in some studies. Biometric indicators include cholesterol levels, blood pressure, and insulin levels. In the previously mentioned review of the literature by Daee and colleagues (2002), studies included reported a decrease of insulin resistance, hyperinsulinemia, and high cholesterol levels among obese individuals who lost weight. It was also reported that airway obstructions decreased with weight loss, resulting in better sleep for obese adolescents.

Miller and colleagues (2002) also measured biometric indicators among participants in the intensive lifestyle program. Baseline measurements included: blood pressure, low-density lipoprotein (LDL) cholesterol, and high-density lipoprotein (HDL) cholesterol levels. Differences between total cholesterol, LDL, and HDL at the

conclusion of the study between the intensive lifestyle participants and the monitoring group were significant ($p < .001$). Participants in the intensive lifestyle group had an average 10.5/5.9 mm Hg decrease in blood pressure from baseline to the end of the study ($p < .001$). Participants in the monitoring group did not have a significant change from baseline to completion. Differences between the groups were also significant at the conclusion of the study ($p < .01$).

Bowen, Noakes, and Clifton (2005) also studied the effects of a diet intervention program on biometric indicators among obese and overweight adults. After accounting for attrition, 50 participants completed the 16-week intervention study. These participants were randomly assigned to a high dairy protein/high calcium diet or a high mixed protein/moderate calcium diet. The high dairy protein/high calcium participants were allowed 2400 mg/day of calcium intake and foods included in the diet were milk, meat, skim milk powder, reduced fat cheese, low-fat yogurt, and eggs. The high mixed protein/moderate calcium group individuals were allowed 500 mg/day and foods that were included: meat, ham, milk, egg, almond, legumes. For the first 12 weeks, the participants in both groups had a restriction of caloric intake of 5.5 MJ/day. During the final four weeks, participants were permitted to slowly increase daily caloric intake levels. Participants also met with a registered dietician every other week to discuss adherence to their respective diet. At baseline and once every four weeks, participants were measured according to height, weight, and body composition. Other biometric indicators that were measured by researchers included: serum cholesterol, plasma glucose, HDL, LDL, and blood pressure.

At baseline measurements there were no significant biometric differences between the two groups. All participants in both groups had a significantly lower weight and total fat from baseline to the completion of the study ($p < .001$). There were no significant differences between groups. Plasma glucose decreased significantly from baseline to completion for both groups ($p < .01$), again there were no statistically significant differences between groups. Similar results were reported for cholesterol levels. There were no significant differences between groups, however, from baseline levels to the final week of the study, there was a significant decrease of total cholesterol ($p < .001$) for both groups. Blood pressure also significantly decreased from baseline to week 16 among all participants, without significant differences between groups.

In a randomized trial to determine cardiac risk factor reduction among obese and overweight adults, Dansinger and colleagues (2005) compared the effects of four popular diets. The sample was divided equally into these four different diets, for a total of 160 participants. The diets that were used included the Zone, Atkins, Weight Watchers, and Ornish diets. The Zone diet focuses on a macronutrient balance of 40% total calories from carbohydrates, 30% from protein, and 30% from fat. Atkins diet focuses on carbohydrate restriction of no more than 20 g daily, without restricting fat or protein intake. Weight Watchers is an overall calorie restriction based on the "points" system with a goal of 24 to 32 points per day. The Ornish diet was the fourth diet; this diet focuses on a vegetarian diet with a restriction of fat intake, less than 10% total calories from fat. The dietary components of these diets were the only measures studied. Participants included in the study had at least one cardiac risk factor: high fasting

glucose, high total cholesterol, high LDL, low HDL, high triglycerides, or high blood pressure.

Once participants were assigned to the specific diet, groups of ten participants met with a dietician and a physician for 1 hr, twice a month for the first 2 months. Participants were asked to adhere to the diet for a year. After the first 2 months, participants were contacted by phone to assess adherence. At the first meeting participants were given instructions and written materials regarding their diet, and the official diet cookbook. Measurements were taken for each participant at baseline, two months, six months and twelve months. Each diet group had a large amount of attrition, Ornish, 50%; Atkins, 48%; Zone, 35%; and Weight Watchers, 35%. However, the attrition between groups was not significantly different. Also, the weight loss between groups was not significant, although all groups lost a significant amount of weight as compared to baseline measures. Cardiac risk factors that yielded significant ($p < .05$) decreases from baseline to the 12-month follow-up included: LDL cholesterol levels, except the Atkins group; and total cholesterol levels. HDL cholesterol levels significantly ($p < .05$) increased from baseline among all diet groups except the Ornish diet. There were no other significant differences from baseline to the 12-month follow-up in any diet groups. Attrition may have had a significant effect on the results indicated in this study.

From the review of these studies it has been demonstrated that several different diets may contribute to decreasing health risks through decreasing biometric indicators such as cholesterol levels and blood pressure. While these are some benefits of dieting, these benefits may be short-lived.

Weight-loss Maintenance

The drawback to many dieting programs found in the research literature is that weight regain frequently occurs by follow-up. This section will discuss several studies that were conducted to determine effectiveness of maintenance of weight-loss. For example, in a longitudinal study by Field and colleagues (2001), the effects of dieting and weight regain were studied. This study's participants were part of the second Nurses' Health Study which observes health behaviors measured at two-year intervals among 116,671 female nurses ranging in age from 25-43 years at baseline. Participants were included in this study based on their responses on a questionnaire regarding their weight and weight cycling to analyze and assess long-term maintenance of weight loss. Over half the women who had lost a significant amount of weight loss, > 5% of baseline weight, in previous years had regained within 4 years all the weight previously lost. Women who had previously lost 5-9.9% of their baseline weight gained more weight within 5 years than their peers. In this study the more weight lost, the more weight was gained at follow up.

In another study by Field and colleagues (2004), the associations of weight change were assessed in regards to weight cycling and weight control methods. This study was also conducted among the participants in the second Nurses Health Study. These participants were a subsample (n = 2751) of the participants in the Nurses Health Study. A supplementary questionnaire was sent to these participants to obtain information regarding lowest weight over the previous four years, intentional and unintentional weight loss, weight regain patterns, dietary restraint, and attitudes about exercise. Based on responses, participants were categorized as mild weight cyclers,

severe weight cyclers, and noncyclers. Requirements for classification as a severe weight cycler included intentionally losing 20 or more pounds in the previous fours years with at least three intentional weight loss periods, 34% of the sample were included in this group. If participants intentionally lost ten pounds three times within the past four years, they were classified as mild cyclers, 41.5% of the sample were included in this group. The remaining participants who did not meet criteria for the above classifications were categorized as noncyclers.

Results for this study indicate that women who are classified as severe weight cyclers had a greater weight change than noncyclers ($p < .001$). This weight loss was not maintained by the follow-up period (7-8 years). The mean gain of weight was 11 pounds, with 10% of the participants gaining 30 pounds or more.

Korkeila and colleagues (1999) also studied the long-term effects of weight cycling on twins in the Finnish Twin Cohort study. This study consisted of 3536 men and 4193 women who were followed for 6-15 years. Several variables were measured at baseline to determine their effect on weight gain. These variables included weight-loss attempts, smoking, alcohol use, education level, social class, and marital status, energy expenditure at leisure and work. The researchers reported mean weight changes in 6 years were not significant, but at the 15-year-follow-up weight gains were significantly higher for older women, and non-significantly higher for the other groups. Older women also had a significantly higher risk of major weight gain, younger women who were classified as dieters had a non-significant higher risk of major weight gain.

Jehn and colleagues (2006) conducted a follow-up study of the above-mentioned study by Miller and colleagues (2002). The study by Miller and colleagues was

conducted to determine weight loss effects of an intensive lifestyle program on obese and overweight adults. This study found a significant difference of weight loss among the participants who were enrolled in the intensive lifestyle program. The follow-up study by Jehn and colleagues was conducted one-year after the Miller and colleagues study was completed. At the follow-up period, participants were once again assessed according to weight and height. Of the original 44 participants, 42 participated in the follow-up study. There were no statistical differences between the groups in regards to weight at this assessment period. Both groups gained weight as compared to the end of the original study. The participants in the intensive lifestyle group were only .5 kg below their baseline weight, and participants in the monitoring groups were .9 kg above their baseline weight. These differences were not significant ($p > .05$).

The studies discussed in this section have demonstrated the short-term success of many attempts of dieters. This short-term success may lead to psychological distress for these dieters as will be discussed in the following section.

Psychological Consequences of Dieting

Participants involved in research studies designed to help participants with weight loss, experience psychological as well as physiological symptoms related to weight loss according to the literature (Daee et al., 2002; MacFarlane et al., 1999). This section will discuss the different psychological effects of dieting including: depression, self-esteem, and food occupation.

Depression

Depression is one of the negative psychological consequences associated with dieting. Not many researchers have previously studied depression levels associated with dieting, however, the following section will discuss those studies that have measured depression levels correlated with dieting.

Polivy and Herman (1999) analyzed the psychological effects of individuals who create a resolution to change weight-loss and study behaviors. The study was conducted among 80 college females who were asked to complete the Restraint Scale to determine restrictive or nonrestrictive eating patterns. After the initial assessment, the participants were divided into categories for comparison, restrictive or non-restrictive eaters, and completed several questionnaires to determine depression, self-esteem, self-image and mood levels. For the purposes of this study a restrained eater, someone who does not eat certain foods or reduces total caloric intake, obtained a high score on the questionnaire, and unrestrained eaters, an individual who does not restrict foods or total caloric intake, obtained a low score. After the initial assessment of these psychological factors, participants were asked to commit to a weight loss program or a program designed to increase study habits. The weight-loss group was told to moderately restrict caloric intake to 1500 kilocalories, and maintain this regimen for 14 days. The study habits group was encouraged to increase studying by one hour per day for 12 to 14 days. The depression levels were assessed again right after the resolution was made as well as at the end of the 2-week study period.

Analyses were conducted between categorization of eating (restrained or unrestrained) and depression levels before and after the resolution and at the end of the study. Results indicated that restrained eaters showed significantly greater depression levels immediately after committing to change as well as a significant increase in depression at the end of the study regardless of how effective they were at changing the behavior, whether it was weight loss or increasing studying. The number of participants per behavior change group was not reported. Unrestrained eaters' depression levels were not significantly affected by committing to either behavior change program.

In the previously mentioned review of literature by McFarlane and colleagues (1999), studies with findings similar to the Polivy and Herman (1999) study were included. In this literature review it was reported that in low-calorie diets (1500 calories/day) and long-term fasting diets (40 days) there was an increase in depression (significance not reported). Studies that researched short-term fasting (up to 14 days) found the opposite effect in that depression levels improved from the beginning of the fasting period to the end. These results were indicated in six studies. There was a significant decrease in depression associated with dieting in these studies. There was also a significant decrease in depression levels in studies involving behavioral modification techniques such as increasing exercise, and instruction in coping skills. Instrumentation has been one possible explanation for the differences in the findings.

Little research has been done regarding the depression levels of participants enrolled in dieting programs, and the effect diets have on depression levels. In the previously mentioned study by Stotland and Larocque (2005), baseline depression levels were measured to determine predictive value of this psychological variable in regards to

ongoing weight loss behaviors. The researchers reported that participants with high levels of depression were significantly ($p < .001$) less likely to continue losing weight. It has been proposed that obese individuals who enroll themselves into a dieting program, may begin these programs with greater depression levels than normal weight individuals who are dieting (Ciliska, 1998).

Although there have not been many empirical studies to determine the association between dieting and depression levels, this section has discussed those studies that have been conducted to determine this relationship. These studies indicate that dieting is associated with depression, however, there are mixed findings regarding this relationship. The reasons for these discrepancies cannot be conclusively determined; it has been proposed that these discrepancies may be a result of instrumentation and selection bias. There have been other psychological variables correlated with dieting as will be discussed in following sections.

Self-Esteem

Research has been conducted to determine the effect of dieting on self-esteem levels (Cameron, 1999; McFarlane et al., 1999; Polivy & Herman, 1999; Rubinstein, 2006). These studies have generally found that individuals who are dieting have lower self-esteem levels than individuals who are not dieting, however this result has not been found by all researchers. The following section will discuss the results of these studies.

A cross-sectional study between normal weight non-dieting, overweight dieting, and overweight non-dieting women was conducted by Rubinstein (2006) in regards to self-esteem levels. Ninety participants were included in the study. Participants who were

enrolled in Weight Watchers were provided with the a questionnaire that had been modified from Rosenberg's Self-Esteem Scale to measure other psychological factors associated with neuroticism, extraversion, openness, agreeability, and conscientiousness. Participants who completed this questionnaire were given two sealed envelopes to give to a friend who was of normal weight and one who was overweight but not participating in a diet program or exercise program. This sampling method determined participants in each of the three groups. Statistical analyses were then run based on responses to the questionnaire.

It was reported that individuals in the normal weight category had significantly ($p < .05$) higher self-esteem scores than participants in the other two categories. Interestingly, results indicated that participants in the overweight dieting program had significantly higher self-esteem scores than individuals who were overweight but not dieting (Rubinstein, 2006).

The study by Polivy and Herman (1999), previously mentioned, found contrasting results to the Rubinstein (2006) study. The Polivy and Herman study also examined the effects of committing to a behavioral change program on self-esteem levels. Again, the effects were measured between restrained and unrestrained eaters and a weight loss or study habits program. Restrained eaters had significantly ($p < .001$) lower self-esteem scores at the beginning and end of the study as compared to unrestrained eaters, across both behavior change groups.

Another study by Kahan, Polivy and Herman (2003) reported self-esteem to be lower in dieters as compared to non-dieters, especially after a failed dieting attempt ($p < .05$). In this study the 59 female participants were enrolled in a study under the guise of

understanding individual differences in visual and taste perceptions. Participants informed the researchers in regards to hunger and last time they had eaten. Participants were also divided into restrained or non-restrained eaters based on responses from the Polivy and Herman restraint scale. Participants were then placed in a room to determine differences between freshly-made cookies based on size, taste, and other dimensions not specified. Those who were restrained eaters ate significantly more of the cookies than unrestrained eaters ($p < .05$). After rating the cookies the participants self-esteem was measured according to the State Self-Esteem Scale by Heatherton and Polivy. This study suggests dieters who do not adhere to their diet are more likely to decline in self-esteem afterwards.

The review by McFarlane and colleagues (1999) also studied research regarding self-esteem levels related to dieting. One such study included in this review reported restrained eaters were more likely to consider their weight and shape to be as important in the development of their self-esteem as other aspects of their lives.

The effect of dieting on self-esteem is also seen in children and adolescents. In a study by Cameron (1999) 54 obese children were enrolled in a weight loss program. The effects of the weight loss program were compared with 60 obese children in a control group. The participants in the weight loss program met for one and a half hours once a week to discuss meal preparation, food choices, eating out, general nutrition, exercise, and dietary evaluation, other activities included a weekly weigh-in, and charting their progress. Participants completed the Piers-Harris Children's Self-Concept Scale before being referred to the weight loss program, and at the end of the program. Control participants were mailed the questionnaire at the same time interval as the intervention

participants were given the questionnaire before the intervention and at the end of the program.

The results of the participants included no statistically significant difference in BMI between control and study participants before or after the intervention, and no significant difference for study participants before and after the intervention. In regards to self-esteem scores, there was no significant difference between control and study group at the beginning of the study, however, the weight loss group had a significantly ($p < .05$) lower score than the control group at the end of the study. The control group did not change significantly from baseline to completion on self-esteem scores.

These studies indicate that self-esteem levels are correlated with dieting. The direction and strength of the association varied between studies. This variation may be due to selection bias or instrumentation. Although these threats to internal validity are present, there has been substantial evidence demonstrating a correlation between these two variables.

Food Preoccupation

Another psychological variable that has been studied in connection to dieting is food preoccupation. Food preoccupation is defined as obsessive thoughts associated with food (McFarlane et al., 1999). Dieters may be at risk to develop food preoccupation as a result of food deprivation (Israeli & Stewart, 2001).

In the Franklin and colleagues (1948) study previously mentioned, the participants related thoughts of food occupying several aspects of their cognitive processes. It was reported by the participants during post-treatment interviews that food

topics occupied conversations, daydreams, and night dreams. These obsessive thoughts occurred in over half the participants (exact number of participants was not provided).

It was hypothesized in a study by Israeli and Stewart (2001) that restrained eaters would recall more forbidden food words than non-restrained eaters in a cross-sectional study. The researchers presented 30 words, 15 were forbidden foods such as: hamburgers, cake, cookie, sugar, chocolate, bacon, pastry, and pizza; and 15 were animal words such as: elephants, falcon, hawk, coyote, dolphins, fly, crocodile, and monkeys. Participants were told to rate each word on a pleasantness scale, they were not told at this time they would be asked to recall any words. At the end of the word presentation participants were provided five minutes to freely recall as many words from the presentation as they could remember. At the conclusion of the recall, participants were asked to complete the Restraint Scale, and respond to a question to assess current dieting.

Participants who were classified as restrained eaters had an average of 19.4 on the Restraint Scale, and non-restrained eaters had an average score of 9.2 on the Restraint Scale. Correlations between score on the Restraint Scale and number of forbidden food words recalled were analyzed. It was reported that participants who were restrained eaters recalled significantly ($p < .05$) fewer animal words than non-restrained eaters, however there was no significant difference between forbidden food words recalled. It was proposed the difference was a result of restrained eaters inability to focus outside thoughts of food. This interpretation suggests that restrained eaters have greater food preoccupation than non-restrained eaters.

Similar to the study by Israeli and Stewart, Stewart and Samoluk (1997) also studied food preoccupation among participants (n = 32). However, participants in the Stewart and Samoluk study were first assigned to a food-deprived or non-food-deprived category. In the food-deprived category participants were asked to eat breakfast at 9:00 am and not eat again on the day of the testing, until after the testing was over, an overall five hours without food. Participants in the non-food deprived study were asked to eat breakfast at 9:00 am and lunch at 1:30 pm on the day of the testing. The testing procedures included completing the Restraint Scale, and the Stroop test. The Stroop test lists several words several times in different colors of ink. Participants are then asked to go across the rows and list the colors on that row. After the Stroop test participants are asked to recall the words from the lists. The words included forbidden foods, alcohol-related, and control words. The score on the Restraint Scale classified participants into three categories: High-Restraint Eater, with a score of 16 or higher; Moderate-Restraint Eater, with a score of 11-15; or a Low-Restraint Eater, with a score of 0-10. The category of restraint was correlated with the number of words recalled, as well as food-deprived or non-food-deprived category. Analyses suggest that participants who were in the food-deprived category did not recall significantly more forbidden food words than non-food-deprived participants. However, participants who were classified as High-Restraint Eaters did significantly ($p < .05$) recall more forbidden food words than Moderate-Restraint and Low-Restraint Eaters. This difference suggests that those who are High-Restraint Eaters have a greater preoccupation with forbidden foods.

The literature review by McFarlane and colleagues (1999) also found a preoccupation with food associated with individuals who were dieting. Several studies

were discussed that found a significant increase in cognitive processes related to food among dieters. One such study reported that among intermittent dieters, intermittent food preoccupation occurred. This review by McFarlane proposed some of the reasons for the preoccupation with food occurred as a result of the body seeking out food to restore or maintain weight.

Although dieting programs may be initially effective at achieving weight loss, these results do not always have long-term effects. The myriad of negative psychological consequences must be considered as reason for determining a more effective way at promoting healthy eating habits. There has been a more effective way of promoting healthy habits proposed, the intuitive eating paradigm. There have been a few empirical research studies conducted to determine the effectiveness of this paradigm.

Physiological Consequences of Intuitive Eating

Intuitive eating has been described as a non-dieting approach to weight loss (Gast & Hawks, 2000); it has also been described as natural eating (McFarlane et al., 1999). Gast and Hawks further explain that intuitive eating may lead to physical as well as psychological health as the individual is not obsessed with thoughts of thinness. This section will discuss findings from the literature in regards to physiological consequences of intuitive eating.

In a study by Bacon and colleagues (2002), a non-diet wellness approach was used in comparison to dieting to determine effects of both types of programs on metabolism, fitness, psychological well-being, and eating behaviors. The study included 78 women over the age of 25 who had a previous history of dieting as measured by a

score of 15 or higher on the Restraint Scale. The participants were randomly assigned to the non-diet wellness program or a dieting program. In the non-diet program participants were taught to eat according to physiological cues, increase physical activity, and improve body acceptance. Participants assigned to the dieting program were encouraged to moderately restrict fat and total caloric intake from their diet. Participants were involved in their respective program for 24 weeks.

Anthropometric measurements were taken at the beginning of the study to determine equality between the groups, it was determined there was no statistically significant difference between groups. As a whole, the diet and non-diet groups significantly increased total physical activity from baseline to mid-treatment, there was also a significant increase in physical activity for the non-diet group as compared to the diet group. This significant increase remained at the one-year follow-up. Both groups had statistically significant results for a decrease from baseline to aftercare in total cholesterol, systolic blood pressure and LDL cholesterol. At the end of the treatment the diet group had statistically significantly reduced weight from baseline to mid-treatment, but these results were not maintained at the 6 and 12-month follow-ups. The non-diet group did not significantly lose weight from baseline to follow-up. The non-diet wellness group maintained a statistically significant increase in energy expenditure, and improved self-esteem, from baseline through all follow-up periods. A threat to internal validity in this study was mortality in the diet group, 13 participants had dropped out by the mid-treatment measurement.

These physiological effects of intuitive eating have also been studied using plasma biomarkers. In a study by Hawks and colleagues (2005) physiological health

aspects among college-aged females were researched. The participants in the study were classified as intuitive eaters or non-intuitive eaters based on their score on the Intuitive Eating Scale. After completing the Intuitive Eating Scale blood samples were taken from participants. The blood samples were taken at 12-hour fasting levels to determine fasting glucose, total cholesterol, and triglycerides. The relatively small sample (15 intuitive eaters, 17 non-intuitive eaters) had significant results; the intuitive eaters had lower BMI (based on measured height and weight), higher HDL, and lower cardiovascular risk (based on blood lipid profile) as compared to the non-intuitive eaters. As the study was cross-sectional no cause and effect conclusion could be drawn.

Smith and Hawks (2006) conducted a study to determine correlations between intuitive eating, dietary behaviors, and BMI. This was a cross-sectional study were participants (n = 343) were asked to fill out a series of questionnaires once. Items on the questionnaire assessed intuitive eating, dietary behaviors, health consciousness and pleasure associated with foods. Items for these different variables were correlated to determine associations. Results indicate that participants who scored higher on intuitive eating had a lower BMI, were less health conscious, and had greater pleasure associated with food. All of these relationships were significant ($p < .05$). These results suggest that individuals who adhere to the intuitive eating paradigm have more pleasure associated with food, were less concerned with health of food and yet had lower BMI than non-intuitive eaters.

Some critics of the Intuitive Eating paradigm have claimed that participants involved in intuitive eating interventions may receive more harm than good as a result of an increase in binge eating and a decrease in biometric indicators (Ciliska, 1998). Ciliska

conducted a study to determine changes in psychological and biometric indicators as a result of participation in an intuitive eating intervention. Participants enrolled in the study (n = 78) were randomly assigned to an educational intervention, psychoeducational intervention or control group. Participants in the educational intervention group were provided a lecture-style presentation once a week for 12-weeks, each presentation lasted one-hour. These presentations addressed topics such as weight regulation, implications regarding dieting, the effects of dieting on emotions and subsequent eating styles, non-diet eating patterns, the relationship of body image and self-esteem, and the importance of physical exercise. Participants in the psychoeducational group were taught similar topics as the educational intervention group, however, they were not given the presentations in a lecture-style. Rather, participants in the psychoeducational group met more in a group therapy session, and were taught cognitive therapy strategies such as assertiveness, and body image exercises.

At baseline participants were measured according to psychological factors such as self-esteem, body image, eating restraint, depression; and physiological factors including: weight, height, and blood pressure. These measures were also taken at the conclusion of the study. Scores from baseline to the conclusion of the study, and between groups were analyzed for statistical significance. The educational intervention group did not change significantly from baseline to the conclusion. Participants in the psychoeducational intervention group did have significantly ($p < .05$) lower levels of depression at the conclusion of the study as compared to baseline measurements. Between group analyses indicated that participants in the psychoeducational intervention group also had significantly ($p < .05$) lower depression levels than the educational or

control groups at baseline. As hypothesized, there was no significant ($p > .05$) change in biometric indicators for participants in any groups from baseline to conclusion, or between groups.

Psychological Effects of Intuitive Eating

Physiological measurements such as biometric indicators have been demonstrated to be better in intuitive eaters as compared to dieters. These same results are promising in regards to psychological effects when comparing intuitive eaters to dieters (Bacon et al., 2002; Hawks, Madanat, Smith, & De La Cruz, in press; Tanco et al., 1998). In the study previously mentioned by Bacon et al. (2002), participants completed the Rosenberg Self-Esteem Measure to determine self-esteem scores at baseline, mid-treatment, post-treatment, and one-year follow-up. As compared to the dieting group, and from baseline to follow-up, there were significant increases in self-esteem scores among the non-dieters but not for the dieters.

A similar study by Tanco and colleagues (1998) studied the effects of intuitive eating on several psychological constructs including, depression, self-control, and state trait anxiety. The study participants were included based on the following criteria: at least 10-years history of obesity, at least three previously unsuccessful weight loss and maintenance attempts, BMI of at least 30, and no psychological disorders ($n = 60$). Participants were then placed on a list to receive treatment for weight loss. Researchers randomly assigned the participants to two groups to assess levels of anxiety, depression and eating-disorder pathology and used remaining participants on the waiting list for

treatment as a control group (n = 19). The group categories for treatment were a cognitive therapy group (n = 20) and behavior therapy group (n = 21).

The cognitive therapy group focused on exercise, exercise self-efficacy, a non-dieting approach, intrinsically eating, recognizing and coping with depression and cognitive distortions, assertiveness and relaxation training, developing a healthy relationship with one's body, and preventing relapse to negative health behaviors. The behavioral therapy group studied goal setting, the diabetes exchange diet, exercise, stimulus control, shaping and rewards, nutrition education, and preventing relapse to pre-intervention patterns. Other factors associated with the different groups included a weekly weigh-in for the behavioral group, and three weigh-ins for the cognitive therapy group. The participants in the cognitive therapy group were only told their weight at these weigh-ins if they wanted to know.

Results indicate that depression among participants in the cognitive therapy group significantly decreased ($p < .05$) from baseline to post-treatment. There was no significant difference between groups for depression, but the behavioral therapy group did not significantly lower depression levels from baseline to post-treatment. Unlike the study by Bacon et al. (2002), this study did not have large attrition. Selection bias is a threat to the internal validity of the study as most participants were already signed up for an intervention program.

Hawks and colleagues (in press) also conducted a study to determine psychological effects of intuitive eating. Participants in the study enrolled in a college course that was designed to teach participants about the intuitive eating paradigm. Topics covered in the college course included: body image, self-esteem, eating

disorders, diet advertisements, and popular weight loss fads. The course was based on the Health Belief Model. At the beginning of the course participants were measured according to intrinsic eating, dieting/restraint behaviors, self-esteem, and body image. According to scores on the Cognitive Behavior Dieting Scale participants were classified as high-restrained or low-restrained eaters. Participants classified as high-restrained eaters had an average baseline score of 52.36, and low-restrained eaters had an average baseline score of 25.27. Scores on the Cognitive Behavior Dieting Scale were then compared with scores of the other psychological variables, and were compared from baseline to completion of the course.

Results indicate that participants in the both groups had a significant decrease of score on the Cognitive Behavior Dieting Scale at the conclusion of the study as compared to baseline scores. Participants classified as high-restraint decreased their average score by 40.9%, participants classified as low-restraint decreased their average score by 23.6%. Participants in the high-dieting group scored significantly ($p < .05$) higher on intrinsic eating and weight concern from baseline to conclusion. Participants in the low-dieting group scored significantly ($p < .05$) higher on intrinsic eating, self-esteem and weight concern from baseline to conclusion (between group analyses were not provided).

These studies indicate that intuitive eating may be a beneficial alternative to dieting. Unfortunately research has been limited on intuitive eating. Although results are promising at follow-up, these follow-up periods have not been longer than 1 year. These studies have also not measured eating patterns in association with intuitive eating, to determine if participants who adhere to the intuitive eating paradigm are eating healthier

than dieters. The next section provides understanding of the importance of studying dietary patterns to comprehend long-term health risks associated with dietary patterns.

Long-term Implications Associated with Dietary Patterns

"You are what you eat." This well-known statement is not implying that if one eats a banana one will become a banana. Rather, if an individual eats many healthy foods, that individual is healthier than an individual who eats a great deal of junk food. Likewise, an individual who does not eat an adequate amount of healthy foods will be unhealthy or at greater risk for chronic diseases. These conclusions have been supported by longitudinal and cross-sectional studies that have researched the long-term consequences of dietary patterns (Fung et al., 2001; McCullough et al., 2000; Newby et al., 2003; Smith & Hawks, 2006; Togo, Osler, Sorensen, & Heitmann, 2001). This section will cover the effects of dietary patterns associated with long-term chronic disease risk and BMI.

McCullough and colleagues (2000) conducted a study with the participants enrolled in the Nurses Health Study regarding eating habits and adherence to the Dietary Guidelines for Americans. Responses to food frequency questionnaires mailed at four-year intervals were integrated into the Healthy Eating Index. The Healthy Eating Index is designed to measure adherence of an individual's diet to the recommended dietary guidelines of the USDA. A total score was derived for each participant based on quantities from each questionnaire received in 1984, 1986, 1990 and calculated by the Healthy Eating Index (HEI). A high score on the HEI indicated a healthy diet and correlated with the Dietary Guidelines for Americans, a low score on the HEI meant the

individual did not have healthy eating habits based on these guidelines. This score was then compared with chronic diseases developed by the participants over the course of the 12-year study. The HEI score was not significantly associated with the development of cancer, or nonfatal cardiovascular disease (myocardial infarction). An association approached statistical significance between the Healthy Eating Index score and cardiovascular disease risk but was not statistically significant, therefore it is difficult to determine long-term consequence of dietary patterns according to the Health Eating Index and adherence to the Dietary Guidelines for Americans.

Newby and colleagues (2003) also studied long-term effects of dietary patterns. Participants in this study were selected from the Baltimore Longitudinal Study of Aging. As this study has been ongoing since 1963, researchers only included participants who joined the study in or after 1980 ($n = 449$). Participants had previously completed four dietary assessments and as part of this research they completed an additional seven-day dietary record annually. Individuals' weight and height were measured by researchers and calculated to determine BMI by individuals. The dietary records and BMI were correlated to determine associations between changes of diet and BMI. The results indicate that participants who ate a majority of meat, potatoes and white bread had a statistically significant increase ($p < .05$) in BMI annually as compared to participants who ate a healthier diet composed of high fiber, high fruits and vegetables and low-glycemic-index foods.

Togo and colleagues (2001) also studied BMI associated with food intake patterns in a review of literature. This review found that six studies had significant results of BMI associated with food intake patterns, and six studies did not have

significant results of BMI associated with food intake patterns. It was suggested the difference in the findings may be due to measurement techniques. Researchers who used more factors/foods to determine dietary patterns found non-significant results. Researchers who studied nutrient content of food intake found significant results. These differences imply a need to understand more than just food or nutrient intake, a recommendation of both types of analysis has been suggested to determine a more complete understanding of food intake patterns.

Summary

Although dieting programs initially are successful at decreasing body mass, these results are not usually maintained at follow-up. The psychological effects of dieting can also be detrimental to individuals participating in specific programs. Research regarding intuitive eating has shown promising results with regards to reducing negative psychological effects of dieting, and teaching people to eat healthier. However, these studies have not researched the actual nutritional content of the participants' diets. Other research has shown that dietary patterns are associated with risk of chronic diseases. Therefore, a nutritional analysis of intuitive eaters is imperative for this approach to be recommended by health educators.

CHAPTER III

METHODOLOGY

Introduction

In this chapter the following will be discussed: (a) research design, (b) population and sample, (c) instrumentation, (d) data collection procedures, and (e) data analysis. Intuitive eating has been proposed as an alternative to dieting. The purpose of this study was to determine the nutritional differences between intuitive eaters and dieters based on intake levels of vegetables, fruits, fats, simple sugars and sodium.

Research Design

The design of this study was nonrandom, cross-sectional and comparative. Quantitative, descriptive data were collected over a period of 2 weeks utilizing questionnaires and the data collected from food logs. The food log data were coded into quantitative data as well. The questionnaires and food logs were self-report. The participants were categorized as intuitive eaters or dieters using their responses on the Intuitive Eating Scale. No control groups were used for the present study.

Strengths of this research design included the use of quantitative and cross-sectional data. Quantitative data are less prone to experimenter bias than qualitative data. Cross-sectional data from the food frequency questionnaire provided strength, as this allowed the researcher to understand the diets of the participants from a long-term basis as opposed to only prospective data the food logs would have provided. Weaknesses of

the research design included the self-report nature of the instruments and non-random sampling. Self-report instruments tend to have less validity than experimenter observations, however, it would not be feasible for a single experimenter to observe each participant's daily diet for the course of the study.

Population and Sample

The population for this research was male and female members of the community in Cache County between the ages of 18 and 65 years who spoke English. The sample was a nonrandom, volunteer sample. Participants were recruited from lower division university classes, mainly introductory psychology courses. Professors in these classes required students to complete a specified number of research projects, this study fulfilled one requirement. Newspaper advertisements in the community and the university newspaper were placed to recruit participants. Flyers were also posted on the university campus in heavy traffic areas (see Appendix A & B). Snowball sampling was also used to recruit participants. This occurred, as participants who contacted the researcher were asked if they knew any other individuals that would be available to participate in the study. As an incentive for participants who completed the food frequency questionnaire and the six days of food recording, they were entered into a drawing in which five $20.00 gift certificates for a local bookstore were awarded.

Previous to data collection, a power analysis was conducted to determine adequate sample size for producing statistical significance. With power equal to .80, an alpha of .05, and a mean difference score of intake between the groups equal to 10 units of intake (i.e. fruit servings, vegetable servings, fat kilocalories), a sample size of 25

participants was determined to be sufficient to determine statistical significance, 49 participants were recruited to account for attrition. Seventeen participants were not included in the final analyses due to incomplete data, therefore the remaining 32 participants used for data analyses were sufficient to determine statistical significance.

Approval from the Utah State University Institutional Review Board was received prior to data collection to ensure no physical or psychological harm would come to participants from this research. A signed informed consent document was required before the researcher collected data from each participant (see Appendix C).

Sample Characteristics

The sample included 49 participants from Utah State University and community members from Cache County, Utah. Two participants did not complete the demographics sheet or the Intuitive Eating Scale and therefore were not included in the data analysis. Of the 47 remaining participants, 23 were classified as dieters, and 24 were classified as intuitive eaters. A total of 15 participants did not turn in two-weeks worth of food logs and were therefore excluded from subsequent analyses, six dieters and nine intuitive eaters. A sample size of 32 was used for all final data analyses.

Age, gender, and activity level were used to determine the suggested daily caloric intake. These variables were entered into the nutritional analysis software and the software then issued the recommended caloric intake per participant. Ethnicity, height and weight were not requested, instead, an average height and weight for men and women was used to determine caloric intake. One demographic characteristic that was not specifically requested was the number of participants who were involved with

college meal plans. However, from statements made by participants during the preliminary meeting, it is assumed around nine participants may have been on college meal plans. It is not known whether these participants were classified as dieters or intuitive eaters.

The ages of participants ranged from 18 to 60 years. Females were the majority of the sample (n = 35), males the minority (n = 12). Activity level was similar in both groups, high intense, at least 60 minutes, almost every day of the week (dieters, n = 0; intuitive eaters, n = 3); intense, at least 30 minutes, more than three times per week (dieters, n = 10; intuitive eaters, n = 7); moderate, 30 minutes, three times per week (dieters, n = 9; intuitive eaters, n = 7); minimal, less than 30 minutes, less than three times per week (dieters, n = 4; intuitive eaters, n = 7). Table 1 displays the differences between group placement (dieters and intuitive eaters) and the sample characteristics.

Table 1

Distribution of Sample Characteristics Between Group Placement

Sample Characteristics	Dieters	Intuitive Eaters
Male (N = 12)	2	10
Female (N = 35)	21	14
Age (completed 2 weeks)		
18-24 years	10	10
25-65 years	7	5

(table continues)

Sample Characteristics	Dieters	Intuitive Eaters
Completed 2 weeks of food logs	17	15
Did not complete 2 weeks of food logs	6	9
Activity level:		
High Intensity	0	3
Intense	10	7
Moderate	9	7
Minimal	4	7

Instrumentation

The instruments used in the data collection process included a food frequency questionnaire, a food log, and the Intuitive Eating Scale. The food frequency questionnaire and food logs were both determined necessary as a means of determining average food intake. Willett (1998) reported that participants who complete food logs may have a tendency to alter average food intake for convenience or social desirability, therefore, the food questionnaire provided a means of comparison with the food logs for a less biased overall understanding of food intake. The food questionnaire was also designed to assess average intake over a longer time period than food logs can be kept (Willett).

The first data collection instrument was a food frequency questionnaire (see Appendix D). This questionnaire was developed by Munger and colleagues (2004) in research with participants from a similar population as in this study. The questionnaire was previously validated by correlating participants' food intake from food logs with their responses on the questionnaire (Spearman $r = .90$) (Munger et al.). There were 189 self-report items on the questionnaire requesting information regarding food intake over the last 12 months including food from dairy, fruits, vegetables, meat, fats, and sugars. The questionnaire also asked for information regarding how the participant prepared the foods they ate and their supplement intake. Each item was coded on a Likert-type scale. The participants were given the choice of frequency including: "Never or < 1 per month, 1-3 per month, 1 per week, 2-4 per week, 5-6 per week, 1 per day, 2-3 per day, 4-5 per day, 6 + per day." All responses on this questionnaire were entered into a nutritional analysis software program, Diet Analysis Plus 7.0, to determine the participant's level of nutrition and healthy status of their diet. The data analyzed were compared with the recommended intake levels from the Dietary Guidelines for Americans to determine health levels of their diet (USDHHS & USDA, 2005).

Participants also completed the Intuitive Eating Scale (see Appendix E) developed by Hawks, Merrill, and Madanat (2004). This scale was used to categorize participants as intuitive eaters or dieters. There were 27 self-report items on the scale. Participants responded to each item using a Likert-type scale. The choices were 1, Strongly Disagree; 2, Somewhat Disagree; 3, Neutral; 4, Agree Somewhat; 5, Strongly Agree. Several items were reversed scored (1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1). These reverse scored items are: 2, 3, 5, 7, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26.

After reverse scoring, the items were summed based on their subscale. Items 1, 4, 10, and 13 are included in the intrinsic subscale. Extrinsic subscale items are 7, 16, 19, 20, 23, and 24. Anti-Dieting subscale includes the items 2, 3, 5, 8, 9, 11, 14, 15, 17, 18, 21, 22, and 26. The final subscale is the self-care subscale which includes items 6, 12, 25, and 27. The subscale scores were summed and participants were categorized as intuitive eaters or dieters based on the arithmetic mean of all scores received.

Validation of this scale was completed by Hawks and colleagues (2004). Content validity was assessed by a panel of experts. Convergent validity was assessed using the 13-item Cognitive Behavioral Dieting Scale. All subscales from the Intuitive Eating Scale correlated with the Cognitive Behavioral Dieting Scale significantly with the exception of the self-care subscale, and in the predicted direction (r = -.84 for intrinsic, r = -.42 for extrinsic, r = -.49 for anti-dieting, and r = -.02).

The final instrument that was used to collect data was the food log (see Appendix F) that participants were given (three food logs per week for a total of six). The time period of food log completion was determined to maximize accuracy of average food intake and minimize participant attrition rates (Willett, 1998). The food logs assessed the daily intake of the participants. Information on the food log included all foods ingested throughout the day, portion sizes, brand names, and how the food was prepared if prepared by the participant. All information reported on these food logs was self-report. Participants were given explicit instructions at the preliminary meeting regarding the completion of these food logs (see Appendix G). The food logs were collected weekly and entered into the nutrition analysis program. No validation studies have been done on any specific food logs however; the food logs that were used in this study have been

used in other community, nonresearched programs and have been found to elicit the information needed.

Data Collection Procedures

Before collection of data occurred, a pilot study was conducted ($n = 5$) to determine if any necessary adjustments were needed to the study procedures (e.g., instrumentation, directions, etc.). Participants in the pilot study provided positive verbal feedback to the student researcher, therefore it was deemed no alterations were needed to the study procedures. After the pilot study, participants were recruited for the proposed study. On the flyers, information was provided for the participants to contact the researcher. When participants contacted the researcher they were informed of the preliminary meeting. Four preliminary meetings were held to accommodate schedules of those who were interested. Participants were invited to attend this meeting to discuss the purpose of the study, receive the informed consent form, and complete the food frequency questionnaire and the Intuitive Eating Scale. These scales were provided in a pamphlet form with the informed consent, a sheet asking demographic questions (see Appendix H), the food frequency questionnaire, and the Intuitive Eating Scale. At the bottom of each of these pages was the participant's unique number so names were only associated through this coded number, assuring participants of confidentiality.

At this meeting participants were given explicit instructions on how to complete their food logs (such as including portion sizes, brand-names, and how the food was prepared). Participants were also shown a visual demonstration of portion sizes to provide standardization in reporting. Participants were asked to not alter their eating

behavior during the length of the study. Participants were also informed of the incentive to completing the study at this meeting.

The food frequency questionnaires and the Intuitive Eating Scales were collected upon completion by the student researcher during this preliminary meeting. Food logs were turned in at the end of each week of the 2-week study at a primary location on the university campus. The student researcher sent emails to participants reminding them of the information to include on their food logs, and of the timeline for completing the food logs. Information from the food logs was analyzed based on nutrition content. The student researcher entered the information from the food logs.

Data Analysis

Coded data were entered into Statistical Package for the Social Sciences (SPSS) version 14 to run descriptive statistical analyses. The student researcher entered the data. The data collected through the demographic questions were not used to determine significant differences; these questions were used for determining suggested caloric intake levels.

The first five research questions were analyzed to determine a statistically significant difference between the two groups. Because the groups were not related, the independent *t*test was used to determine if there is a difference between groups. The last research question was not designed to determine differences; rather it was designed to determine significance in combinations of groups. Therefore, a chi-square test was performed for research question six as there were more than two categories. Each research question was paired with appropriate statistical analyses to determine the

statistical significance as shown in Table 2. The researcher also performed analyses to determine validity of the instruments, as well as correlation between the food frequency questionnaire and food logs.

Research Questions

Based on the recommended food intake from the Dietary Guidelines for Americans (USDHHS & USDA, 2005) this study addressed the following research questions:

1. Are participants who eat intuitively eating more fruits than dieters?
2. Are participants who eat intuitively eating more vegetables than dieters?
3. Are participants who eat intuitively consuming fewer calories from fats than dieters?
4. Are participants who eat intuitively consuming fewer calories from simple sugars than dieters?
5. Are participants who eat intuitively consuming less sodium than dieters?
6. Are participants who eat intuitively consuming and not exceeding their recommended caloric intake?

Table 2

Data Analysis Procedures

Research Question	Instrument	Statistical analysis
1. Are participants who eat intuitively eating more fruits than dieters?	Food Frequency Questionnaire and 6-day food logs.	Means, standard deviation, independent samples *t*test to determine if a significant difference between groups.
2. Are participants who eat intuitively eating more vegetables than dieters?	Food Frequency Questionnaire and 6-day food logs.	Means, standard deviation, independent samples *t*test to determine if a significant difference between groups.
3. Are participants who eat intuitively consuming fewer calories from fats than dieters?	Food Frequency Questionnaire and 6-day food logs.	Means, standard deviation, independent samples *t*test to determine if a significant difference between groups.
4. Are participants who eat intuitively consuming fewer calories from sugars than dieters?	Food Frequency Questionnaire and 6-day food logs.	Means, standard deviation, independent samples *t*test to determine if a significant difference between groups.

(table continues)

Research Question	Instruments	Statistical Analysis
5. Are participants who eat intuitively consuming less sodium than dieters?	Food Frequency Questionnaire and 6-day food logs.	Means, standard deviation, independent samples *t*test to determine if a significant difference between groups.
6. Are participants who eat intuitively consuming and not exceeding their recommended caloric intake?	Food Frequency Questionnaire and 6-day food logs.	Chi-square after calories are totaled on a daily basis and coded, to determine a significant difference between groups.

Summary

This chapter explained the processes that were involved in completing the present study. These processes included recruiting participants and maintaining confidentiality, data collection procedures, and data analyses. Internal and external threats to validity have been discussed as well as procedures for limiting their effects on the results. The instruments that were used to collect data were discussed in regards to items, validity and reliability. Specific procedures for analyzing statistical significance with the data were discussed.

CHAPTER IV

RESULTS

Introduction

The study was designed to determine the dietary differences between intuitive eaters and dieters. The previous chapter related the procedures that would be used to analyze the data collected in this study. This chapter will relay the results of the analyses for each research question presented in Chapter III. The present study meetings were held on the Utah State University campus, as it was a central location for community members and college students. Participants also left the completed food logs in a central location on the campus, however, there were participants from the community and the campus.

Research Question One

Are participants who eat intuitively eating more fruits than dieters? Research question one was used to determine the difference in the amount of fruits consumed by dieters and intuitive eaters. According to the intuitive eating paradigm, it was hypothesized intuitive eaters would consume more fruits than dieters. As the two groups (dieters & intuitive eaters) were independent of each other an independent sample *t*test was used to determine if the difference, if any, was statistically significant. Responses from the food frequency questionnaire and the food logs were analyzed first separately then combined. There was no statistical significance between groups with regard to the

amount of fruit consumed for any analysis, food frequency, $t(30) = 1.61$, $p = .12$; food logs, $t(30) = .36$, $p = .72$; combined, $t(30) = 1.66$, $p = .11$; therefore, the null hypothesis was accepted. Table 3 presents the results of the analyses regarding research question one.

Table 3

Research Question One Analyses

Analysis	Food Frequency Questionnaire	Food Logs	Combined
Mean Dieters ($N = 17$)	16.88	1.12	18.00
SD Dieters	14.23	0.99	13.92
Mean Intuitive Eaters ($N = 15$)	10.20	1.00	11.20
SD Intuitive Eaters	7.96	.85	8.37
*t*test *df*(30)	1.61	.36	1.65
P	.12	.72	.11
Pearson's *r* (Food Frequency, Food Log)	-.09		
P	.63		

Research Question Two

Are individuals who eat intuitively eating more vegetables than dieters? Research question two was designed to determine differences between dieters and

intuitive eaters and the amount of vegetables consumed. It was hypothesized intuitive eaters would consume more vegetables than dieters. An independent samples *t*-test was used to determine if there was a difference, if it was statistically significant the null hypothesis could be rejected. The differences tested were between the means of the groups on food frequency questionnaire, food logs, and the combined total. No significance was found for any analyses, food frequency questionnaire, $t(30) = 1.86$, $p = .07$; food logs, $t(30) = .27$, $p = .79$; combined, $t(30) = 1.85$, $p = .07$. Therefore the null hypothesis was retained. Table 4 displays the analyses in regards to research question two.

Table 4

Research Question Two Analyses

Analyses	Food Frequency Questionnaire	Food Logs	Combined
Mean Dieters ($N = 17$)	28.94	1.76	30.71
SD Dieters	12.70	.83	12.65
Mean Intuitive Eaters ($N = 15$)	20.80	1.67	22.47
SD Intuitive Eaters	12.00	1.23	12.46
*t*test *df*(30)	1.86	.27	1.85
P	.07	.79	.07
Pearson's *r* (Food Frequency, Food Log)	.15		
P	.41		

Research Question Three

Are individuals who eat intuitively eating fewer calories from fats than dieters? Research question three was designed to determine if there was a statistical difference between intuitive eaters and dieters in the amount of calories consumed from fats. An independent samples *t*test was used to determine a significant difference for this question. The null hypothesis was not rejected as there was not a significant difference between groups for the food frequency questionnaire, $t(30) = 1.00$, $p = .32$; food logs, $t(30) = -1.37$, $p = .18$; or a combined total $t(30) = .80$, $p = .43$. Table 5 represents the results of research question three analyses.

Table 5

Research Question 3 Analyses

Analyses	Food Frequency Questionnaire	Food Logs	Combined
Mean Dieters ($N = 17$)	513.81	63.55	577.36
SD Dieters	269.17	27.39	283.23
Mean Intuitive Eaters ($N = 15$)	429.62	76.73	506.35
SD Intuitive Eaters	192.69	26.70	211.28
*t*test *df*(30)	1.00	-1.37	.80
P	.32	.18	.43
Pearson's *r* (Food Frequency, Food Log)	.47		
P	.01		

Research Question Four

Are individuals who eat intuitively eating fewer calories from simple sugar than dieters? This research question was developed to determine if intuitive eaters were eating healthier than dieters by determining a statistically significant difference of the amount of simple sugars consumed. An independent *t*test was used to determine if the difference between the groups was significant. Statistical significance was not found with regards to the difference in sugar consumed reported on the food frequency questionnaire, $t(30) = .35$, $p = .73$; food logs, $t(30) = -1.40$, $p = .17$; or a combined total, $t(30) = .19$, $p = .85$. Table 6 displays the analyses conducted for research question four.

Table 6

Research Question 4 Analyses

Analyses	Food Frequency Questionnaire	Food Logs	Combined
Mean Dieters ($N = 17$)	791.53	92.24	883.78
SD Dieters	545.49	46.86	547.12
Mean Intuitive Eaters ($N = 15$)	735.61	116.94	852.54
SD Intuitive Eaters	313.54	53.25	330.04
*t*test *df*(30)	.35	-1.40	.19
P	.73	.17	.85
Pearson's *r* (Food Frequency, Food Log)	.06		
P	.75		

Research Question Five

Are individuals who eat intuitively consuming less sodium than dieters? Research question five was used to determine if there was a statistically significant difference between dieters and intuitive eaters in regards to sodium consumption. It was hypothesized intuitive eaters would consume less sodium than dieters. An independent *t*test was conducted to determine if the difference was significant. Significance was not found, therefore, the null hypothesis was retained for the food frequency questionnaire, $t(30) = .19$, $p = .85$; food logs, $t(30) = -.68$, $p = .51$; a combined total, $t(30) = .07$, $p = .95$. Table 7 displays the analyses conducted for this research question.

Table 7

Research Question 5 Analyses

Analyses	Food Frequency Questionnaire	Food Logs	Combined
Mean Dieters ($N = 17$)	16753.21	3140.91	19835.29
SD Dieters	7977.84	1150.27	8660.71
Mean Intuitive Eaters ($N = 15$)	16216.28	3406.83	19623.11
SD Intuitive Eaters	7800.83	1066.12	8565.85
*t*test *df*(30)	.19	-.68	.07
P	.85	.51	.95
Pearson's *r* (Food Frequency, Food Log)	.63		
P	.00		

Research Question Six

Are individuals who eat intuitively consuming and not exceeding their recommended daily caloric intake? This research question differs from the previous five as it is not measuring differences between groups, rather measuring if participants classified as intuitive eaters are consuming but not exceeding their recommended daily caloric intake. Data from participants who were classified as dieters were not used for this questions. To determine if a significant difference existed between expected norms and observed norms a chi-square test was conducted. The null hypothesis would suggest the participants would be equally divided between the three groups (100 kilocalories below suggested intake level, 100 kilocalories above or below suggested intake level, 100 kilocalories above suggested intake level). The test was statistically significant, x^2 $(2, N = 15) = 10.80$, $p = .01$. There were two participants who had consumed more than 100 of their suggested caloric intake, two participants who had consumed within 100 of their suggested caloric intake, and eleven who had consumed less than 100 of their suggested caloric intake. Table 8 displays the results of the chi-square test.

Table 8

Research Question 6 Chi-Square Test

	Observed *N*	Expected *N*	Residual
Below 100	11	5.0	6.0
Within 100	2	5.0	-3.0
Above 100	2	5.0	-3.0
Total	15		

Summary

This chapter has presented the results of the analyses for the research questions previously listed. Chapter V will discuss these results and their implications for health educators and future research.

CHAPTER V

DISCUSSION

Introduction

The current study was designed to understand dietary differences between intuitive eaters and dieters. Previous literature discussed the importance of healthy eating habits and the impact these eating habits have on future health conditions of the individual. The intuitive eating paradigm also suggested that individuals who eat intuitively eat healthier than individuals who diet (Ciliska, 1998; Hawks et al., 2005; McFarlane et al., 1999; Tanco et al., 1998). There is limited research supporting this claim, therefore, this study was designed to add to the current literature on intuitive eating. Table 9 presents the current research questions, results of the analyses, and compares these present results with previous literature. Previous chapters discussed the need for the present study, methods for carrying out the research and the results of the study. This chapter will discuss the results of the previous chapter and implications for health educators. Suggestions for future research will also be discussed.

Conclusions

Most results of the data analyses were found to be non-significant. The questions were similar in nature and thus possible explanations for the findings were also similar. The majority of the sample was college aged (18-24 years, $n = 20$), which may have resulted in a similar diet due to their similar stage in life. The researcher observed from

the food logs that many participants ate fast food frequently, regardless of being a dieter or an intuitive eater, which may account for the lack of fruit and vegetable consumption and excessive consumption of fats and sodium.

Table 9

Current Research and Correlated Research

Research Question	Data Analysis Results	Supporting Literature	Opposing Literature
1. Are participants who eat intuitively eating more fruits than dieters?	No significant difference was found between dieters and intuitive eaters.	Anding et al. (2001) Racette et al. (2005)	Chung et al. (2006) Miller et al. (2002) Newby et al. (2003) Smith & Hawks (2006) Togo et al. (2001)
2. Are participants who eat intuitively eating more vegetables than dieters?	No significant difference was found between dieters and intuitive eaters.	Anding et al. (2001) Racette et al. (2005)	Miller et al. (2002) Newby et al. (2003) Smith & Hawks (2006) Togo et al. (2001)
3. Are participants who eat intuitively consuming fewer calories from fats than dieters?	No significant difference was found between dieters and intuitive eaters.	Anding et al. (2001) Dansinger et al. (2005) Racette et al. (2005)	Kahan et al. (2003) Smith & Hawks (2006) Stewart-Knox et al. (2005)

(table continues)

Research Question	Data Analysis Results	Supporting Literature	Opposing Literature
4. Are participants who eat intuitively consuming fewer calories from sugars than dieters?	No significant difference was found between dieters and intuitive eaters.	Anding et al. (2001)	Malinauskas et al. (2005) Newby et al. (2003) Smith & Hawks (2006) Togo et al. (2001)
5. Are participants who eat intuitively consuming less sodium than dieters?	No significant difference was found between dieters and intuitive eaters.	Anding et al. (2001) Soliah et al. (2006)	Miller et al. (2002) Smith & Hawks (2006)
6. Are participants who eat intuitively consuming and not exceeding their recommended caloric intake?	Intuitive eaters were found to significantly eat less than 100 of their recommended calories.	Kahan et al. (2003) Dansinger et al. (2005)	

As a group, regardless of being a dieter or intuitive eater, college student food choices appear to be very similar. College students have limited time and income to prepare meals, may eat on meal plans, or eat out with friends more often as compared to

other groups. Where they may differ by group is simply in the amount of calories they consume due to dieting status. This section will discuss the results of the previous chapter for each research question.

Research Question One

Research question one was developed to determine if there was a difference between dieters and intuitive eaters in regards to consumption of fruit. The most recent recommendation for fruit consumption is two to four servings per day (USDHHS & USDA, 2005). Previous research has shown that individuals who include more fruit in their diet have a lower BMI at follow-up periods (Miller et al., 2002; Newby et al., 2003; Togo et al., 2001). Smith and Hawks (2006) found that intuitive eaters are less health conscious about their food choices, yet have a lower BMI than dieters. The current research study did not find similar results. The findings of the independent samples *t*-test showed no statistically significant difference between dieters and intuitive eaters on fruit consumption in the present study. Therefore, those who were trying to lose weight through dieting, and those who were eating intuitively were eating similarly in regards to fruit consumption. In the present study the arithmetic mean of intuitive eaters and dieters from the food logs was $M = 1.12$ ($SD = 0.99$), and $M = 1.00$ ($SD = .85$), respectively.

One study that found similar results to the present study was conducted by Anding, Suminski, and Boss (2001). This study was designed to determine the compliance of college students to the Dietary Guidelines for Americans. Participants were measured on consumption of fruits, vegetables, grains, dairy products, meats, fats, sugars, and sodium. Three food logs that were completed by the participants were used

to measure food intake. Researchers stated a majority of participants complied with at least one guideline; however, none of the participants were following all seven guidelines. The study by Anding and colleagues had means of fruit consumption similar to those found in this study. Only 9 of the 60 participants from their study consumed at least the minimal recommendation of fruits. The current study only had three participants eat an average of the least recommended number of fruits per day.

Reasons for this lack of difference between groups in the current study may include the similarity of college students' diets. The season of the year the study was conducted may be another reason for such limited consumption of fruit for both groups which for dieters was $m = 1.12$, and intuitive eaters was $m = 0.99$. In addition there may also be a lack of education about how many fruit servings are recommended per day among the study participants.

Results in a study by Driskell, Meckna, and Scales (2006) were similar to findings in this study. Researchers distributed a survey to college students requesting information regarding frequency of eating at fast food restaurants, reasons for eating there, health consciousness when eating there, and choice of type of fast food restaurant (American burgers, Mexican, or deli sandwiches). In their study 82% of participants reported eating dinner at a fast food restaurant at least once weekly. The frequency of eating at fast food restaurants was related to a decrease in fruit consumption and an increase in fat consumption.

In a study by Chung, Hoerr, Levine, and Coleman (2006), participants ($n = 236$) were asked to complete a survey regarding their fruit and vegetable consumption and their intention to consume the nationally recommended levels of fruits and vegetables.

Participants also recorded foods consumed for three days to determine accurate intake of fruits and vegetables. Participants were classified based on their responses on the survey for fruit consumption as precontemplation/contemplation (n = 45), preparation (n = 37), or action/maintenance (n = 154). Participants were then compared based on group placement and fruit consumption. Differences between groups were statistically significant for fruit consumption ($p < .0001$).

This was in contrast to the findings of this study where only eight participants consumed the minimal recommended level of at least two fruit servings per day. The disparity between the studies may be from the research questions asked, also the sample size. The research questions from the Chung and colleagues (2006) study were designed to place participants in groups based on fruit consumption. In the current study, participants were first placed in groups and then asked about fruit consumption. Also participants from the Chung and colleagues study were recruited from introductory nutrition classes and participants from the current study were not specifically recruited from nutrition or health classes. It could be hypothesized that students taking health oriented courses engaged in healthier eating behaviors.

However, a study by Racette, Deusinger, Strube, Highstein, and Deusinger (2005) also found that participants of college age did not adhere to the recommended daily intake of fruits. Participants (n = 764) were asked to complete a dietary questionnaire that requested information regarding fruit and vegetable consumption, limiting fast food, high fat food consumption, limiting fried food consumption and consuming at least 64 ounces of non-caffeinated, non-alcoholic beverages. These

participants were recruited from the general population of freshman students, as opposed to recruiting from a specific type of course.

Researchers reported that fruit consumption was significantly inversely correlated with high-fat, fast food consumption ($p < .001$). Just about half of the participants (46%) of participants consumed high-fat, fast food at least three times in the week prior to completing the survey. Conversely, only 30% of participants had consumed the minimal recommendation of fruits daily in the previous week. These numbers were self-reported based on recall, which is a limitation of the current study as well. However, all previous research discussed in this section reported results based on self-reported measures.

From the literature discussed in this section, there is not a specific reason for college students' lack of fruit consumption found in the current study. Several previous studies discussed found similar results, however this was not consistent throughout the research. It was found though, that fruit consumption is inversely correlated with fat intake.

Research Question Two

Research question two was designed to understand differences between eating habits regarding vegetable consumption of the two groups. Similar results were found for question two as existed for question one, dieters and intuitive eaters consumed similar amounts of vegetables as shown by the small difference between means (M = 1.76, SD = 0.83; M = 1.67, SD = 1.23 respectively). This small difference once again yielded a nonsignificant independent *t*test. Therefore, the conclusions drawn from

previous research stating dieters and intuitive eaters make different health choices concerning food does not support findings of the current research (Miller et al., 2002; Newby et al., 2003; Smith & Hawks, 2006). Togo and colleagues (2001) completed a review of literature that found research studies measuring nutrients as opposed to food intake had significant results. Therefore, the non-significant results may be due to a measurement of food intake as opposed to nutrient intake. As stated previously, the study by Anding and colleagues (2001) found a similar average consumption of vegetables as the current study.

Smith and Hawks (2006) did not measure foods consumed, rather they measured attitudes about food choices. Their large sample ($N = 343$) was asked to complete several questionnaires that assessed dietary behaviors, health consciousness of food choices and pleasure associated with food. Results indicated that intuitive eaters were significantly less health conscious about food choices than dieters.

In the study by Miller and colleagues (2002) participants were placed on a diet of high fruit and vegetable consumption and low sodium. Dieters were measured on adherence and then compared to a control group. These 44 participants were followed over nine weeks. It was found that participants who were placed on the diet consumed a significantly greater amount of vegetables than non-dieters ($p < .01$). Sample size was similar to the present study; however, length of the study differed from the present study as the present study was only conducted over 2 weeks. This difference in length of study may account for some of the differences between findings as the longer the study the more likely to have accurate accounting for food consumption (Willett, 1998).

The previously mentioned study by Anding and colleagues (2001) found that participants reported similar vegetable consumption as the current study. Only 9 of their 60 participants reported consuming the minimal recommendation of vegetables daily. Low consumption of vegetables was also found in the previously mentioned study by Racette and colleagues (2005). This study reported the frequency of eating at fast food restaurants was inversely correlated with vegetable consumption. Similar findings were reported in the previously mentioned study by Driskell et al. (2006). The percentage of participants (82%) that frequented fast food restaurants was quite high, and average consumption of vegetables was low (less than minimum recommendations). However, the study by Chung et al. (2006) found that a majority of participants were eating at least the minimal recommended servings of vegetables. Participants in this study had been classified based on vegetable consumption as precontemplative/contemplative (n = 80), preparation (n = 52), and action/maintenance (n = 104).

There have been several methodological differences already discussed between the present study and previous research that may have accounted for the differences in findings. The main distinction is that previous research found differences between the groups, and the current study did not find any differences between groups based on vegetable consumption.

Research Question Three

This research question addressed the recommendation from the USDHHS and USDA (2005) that individuals should consume fewer than 30% of all calories from fats. It was therefore hypothesized that if intuitive eaters eat healthier than dieters, intuitive

eaters would consume fewer calories from fats than dieters. Kahan and colleagues (2003) found that restricted eaters consumed more cookies than non-restrained eaters. Dansinger and colleagues (2005) found somewhat similar results in that participants who were not given specific foods as part of weight loss diet (e.g., Weight Watchers) consumed fewer calories from fats than those participants who had regimented weight loss diets with fewer food choices. Interestingly, the current study did not yield results similar to the previous literature, no difference was found between groups on fat consumption. In the current study the means of fat consumption of both groups was very similar (Dieters $M = 63.55$, $SD = 27.39$; Intuitive Eaters $M = 76.73$, $SD = 26.70$) as a result the independent *t*test was nonsignificant.

One reason for the difference in findings between previous literature and the current study may include that participants were not assigned a specific diet. Participants were measured based on their natural food choices, not prescribed ones. Another possible explanation for the similarity in means is participant fatigue in completing the food logs.

Also as noted above, the majority of the sample was college students with very similar dietary behaviors. The means of fat consumption for the current study were similar to the study by Anding and colleagues (2001). In the Anding and colleagues study the mean intake of fats was 37% of total calories. The current study found an average of 32% of total calories from fats. While the study by Racette and colleagues (2005) did not measure differences between dieters and intuitive eaters, they found that college students did eat several high fat, fast foods per week. Also, as was mentioned

previously, the amount of fat consumed was inversely correlated with fruit and vegetable consumption.

The same findings were reported in a study by Stewart-Knox, Hamilton, Parr, and Bunting (2005). This study did not specifically study college students; participants were recruited from the community (N = 1004). Participants were asked to complete a questionnaire regarding consumption of low-fat or fat free foods. The questionnaire also requested information regarding fruit and vegetable consumption in connection with a desire to lose weight. It was found there was a significant positive correlation between low-fat or fat free foods consumed and fruit and vegetable consumption. The differences between this study and the current study were the sample size, lack of food logs in the previous research, and those who were trying to lose weight in the current study did not consume more fruits and vegetables or less fat.

Several studies discussed have found that fat consumption is inversely correlated with fruit and vegetable consumption. Participants in the current study did consume an average of fat greater than the nationally recommended amount, and fruit and vegetable consumption was lower than the nationally recommended amount. Therefore, the current study was consistent with previous literature.

Research Question Four

There are no national recommendations for intake of sugar, however, previous literature has reported individuals who consume fewer sugars had a lower BMI at follow-up study periods (Newby et al., 2003; Togo et al., 2001). In addition, public health and government agencies do council to limit sugar intake (USDHHS & USDA,

2005). With the support of this literature research question four was designed to determine if there was a difference between intuitive eaters and dieters and consumption of sugars. Unlike previous research findings that demonstrated a difference in sugar consumption between groups, the current research did not find a significant difference in sugar consumption between groups. However, these findings are similar to the Anding and colleagues study (2001) where college participants were found to consume 19.7% of total calories from sugars. The present study found an average consumption of total calories to be 17.59% from sugars.

It would be assumed that dieters would limit sugar intake to encourage weight loss. However, as with the previous research questions results, the means of the groups were similar (Dieters $M = 1.12$, $SD = 0.99$; $M = 1.00$, $SD = .85$), with a nonsignificant independent *t*test. These similarities in means may be caused by the same reasons as listed previously: limited variability in participant demographics, study duration, participant recording fatigue, and small sample size. If the study had prescribed a diet for participants who were classified as dieters to adhere to it may have resulted in a larger difference in means between groups.

A study by Malinauskas, Raedeke, Aeby, Smith, and Dallas (2006) found contrary results to the current study. Participants in the study were weighed and measured with skin fold calipers to determine BMI and body fat percentage. Based on these results participants were classified as normal weight, overweight or obese. Participants were then asked to complete a questionnaire regarding dietary practices and weight perceptions. Researchers found that participants who were normal or overweight

significantly consumed artificial sweeteners more often than participants who were obese. Therefore, the fewer sugars consumed the less the participants weighed.

One reason why there may be a difference between the results of the Malinauskas and colleagues (2006) study and the current study is the lack of food logs in the previous research. Participants were merely asked about dietary practices without a means of observing the participants intake. In the current study participants were asked to complete a food frequency questionnaire as well as keep food logs for 6 days. There was little correlation between the results of the food frequency questionnaire and food logs, meaning participants may perceive they eat differently than they actually do.

Research Question Five

National recommendations state that sodium consumption remain below 1,500 mg per day for an individual (USDHHS & USDA, 2005). Therefore, research question five was designed to determine if intuitive eaters ate healthier than dieters on this characteristic. Miller and colleagues (2002) found in their study that dieters consumed less sodium than non-dieters. This is in contrast to the findings of the current research study. Dieters and intuitive eaters were found to consume similar levels of sodium in their diets (M = 3140.91, SD = 1150.27; M = 3406.83, SD = 1066.12; respectively). These findings are similar to the findings in the Anding and colleagues (2001) study that reported college participants consume an average of 3,204 mg daily. One reason for the increase in sodium may be due to frequent patronage to fast food restaurants.

As was discussed previously the study by Miller and colleagues (2002) prescribed a diet to participants and measured adherence over nine weeks. Although the

sample size was similar between Miller's study and the present study, the duration and prescribed diet may be one reason for the different findings.

A study by Soliah, Walter, and Antosh (2006) among college females found college students eat out more frequently than other age groups. Participants were asked to complete a survey regarding food preparation and how often they eat out. It was found that all participants eat outside of the home at least once a week. Just under half (41%) of the participants ate out four or more times per week. Reasons stated for this frequency in eating out were lack of knowledge of food preparation, lack of time, and lack of interest in preparing food. Researchers stated one effect of eating out so much is an increase in sodium. As was previously stated the student researcher found participants in the current study also reported eating out frequently. This may be a reason for the increased amount of sodium consumed by participants. Reasons for the similarities may be the frequency of fast food eating reported by participants in both studies.

In this section the reasons for such high sodium consumption among participants in the current study were discussed. There was no significant difference between dieters and intuitive eaters. It was found that eating at fast food restaurants frequently may increase sodium consumption.

Research Question Six

Research question six was not designed to determine a difference between groups but rather to determine if intuitive eaters were consuming but not exceeding their individually recommended daily caloric intake. Previous research has shown that intuitive eaters tend to not consume above their recommended caloric intake (Dansinger et al., 2005; Kahan et al., 2003). The current research study found similar results. A chi-

square test was used to determine if the observed number of intuitive eaters per category was statistically significant from the expected number of intuitive eaters per category. As the majority of participants (n = 11) fell into one category (below 100 of recommended calories), the chi-square test results were significant ($p < .01$). The participants may have had a low average of calorie consumption due to participant fatigue in recording all foods eaten throughout the day. The researcher also observed many participants were not recording eating breakfast, which may be a common practice for college students.

A study by Mahabir and colleagues (2006) was conducted among postmenopausal women to determine accuracy in self-reported calorie intake. Participants were provided a regimented diet to adhere to and were asked to complete a seven-day diet record as well as a food frequency questionnaire. Researchers reported that participants reported an average of 37% fewer calories on the diet record than were actually consumed, and an average of 42% fewer calories on the food frequency questionnaire. The results of this study may provide an understanding of the low consumption of calories reported by intuitive eaters in the current study.

The previously mentioned study by Malinauskas and colleagues (2006) reported a statistically significant difference between groups based on consciously not eating as much as one would like ($p < .01$), however, there was not a significant difference between groups on counting calories consumed. Therefore, participants in this study were not consciously counting calories, however, participants who were of normal or overweight were eating less than they would like more often than participants who were obese. Although participants in the current study were not classified based on weight,

there are similarities in the findings of both studies. The current study participants who were classified as intuitive eaters (m = 2171.87) were not consciously counting calories but they were consuming a nonsignificant ($p > .05$) greater amount than dieters (m = 1793.06) as shown by the means of the groups.

Implications for Health Education

From the results of this study, several implications for health education should be discussed. This study was designed because intuitive eating is becoming more popular among health educators and therefore it has become imperative to understand if intuitive eaters eat healthier than dieters.

As has been discussed in previous chapters, there are many psychological and physiological problems associated with dieting. Also, as was found in the results of this study the dieters did not eat any healthier than intuitive eaters. The previous literature has demonstrated that dieting does not have long term results (Field et al., 2004; Korkeila et al., 1999) and many individuals who engage in dieting become involved in yo-yo dieting and weight cycling. The study by Field and colleagues (2004) found those who were classified as weight cyclers gained more weight on average than non-cyclers. Those who were weight cyclers also had a higher BMI on average than non-cyclers at follow-up periods. Other studies have found that dieting can have aversive psychological effects as well (Daee et al., 2002; MacFarlane et al., 1999; Polivy & Herman, 1999). These psychological effects include depression, low self-esteem, and food preoccupation. It is apparent there is a need for health educators to develop an alternative to dieting to address the growing rate of obesity in America (CDC, n.d.).

Preliminary research on the intuitive eating paradigm has shown promising results as an alternative to dieting (Bacon et al., 2002; Ciliska, 1998; Hawks et al., 2005; Polivy & Herman, 1999). This research has shown higher self-esteem scores and lower preoccupation with food when compared to dieters. It has also shown lower cholesterol levels and lower BMI. Although the intuitive eating paradigm research is promising, it is still relatively new and therefore challenging to find participants who are classified as intuitive eaters. It is important for health educators to increase their knowledge of intuitive eating so this knowledge can be disseminated to individuals as a healthy method of eating habits. Intuitive eating has been suggested as a natural, instinctive method of eating (Hawks et al.) and therefore warrants the attention of health educators as a priority method in decreasing the rate of obesity in America.

While this study did not find any differences between groups more research is needed with a more diverse sample to determine if there really is any difference between dieters and intuitive eaters. Although it was not studied specifically in the present study, intuitive eating has been shown to be a psychologically healthier way of life than dieting in previous research (Bacon et al., 2002; Ciliska, 1998; Hawks et al., in press; Polivy & Herman, 1999). Health educators need to know if intuitive eating is a healthy eating alternative to dieting before it can be recommended clinically.

The USDHHS and USDA (2005) have published recommendations for Americans on healthy eating behaviors. The food guide pyramid has been distributed to help individuals understand these recommended levels. However, the means of data analysis for the research questions suggest this sample is not consuming these recommended levels. Health educators should be aware of these poor eating habits and

help college students understand the importance of eating according to the recommendations.

Previous research has shown the negative health outcomes from not adhering to the Dietary Guidelines for Americans (McCullough et al., 2000). Other research has found negative health outcomes associated with poor eating habits, such as high fat consumption, and low fruit and vegetable consumption (Fung et al., 2001; Korkeila et al., 1999; Newby et al., 2003; Togo et al., 2001). These negative health outcomes include an increased risk of Cardiovascular Disease, increased risk for Diabetes Type II, and increased obesity rates. The diseases mentioned are some of the current leading causes of preventative death among Americans (Minino, Heron, Murphy, & Kochankek, 2007).

Fortunately, the long-term impact of a poor diet can be reversed (Bacon et al., 2002; Ciliska, 1998). Health educators need to inform college students of the severity of a poor diet, and help them understand their current eating habits may cause further problems later in life. College students should also be made aware of the opportunity to reduce the risk of developing these health problems by consuming a diet that incorporates the recommendations of the Dietary Guidelines for Americans.

The current research has shown there are several areas of dietary intake that health educators should target in future behavioral change programs. It is also suggested that health educators disseminate the importance of consuming a diet similar to recommendations from Dietary Guidelines for Americans. This section has discussed the implications for health educators, the next section will discuss recommendations for future research.

Recommendations for Future Research

There were several limitations of this study that if resolved in future research may yield different results. In terms of research design, length of the study and supporting staff were two limitations of the study that should be addressed. In future research if food logs are used the number of food logs should be increased. Participants should not complete more food logs in two weeks, but rather, food logs should be collected throughout the year at set intervals to yield more accurate results of the average intake of participants.

As an alternative to collecting food logs, participants could receive random calls requesting information about food consumed in the past 24 hr. This was not possible with only one researcher; however, if a research staff is employed and trained to elicit similar responses from participants more accurate results may be found. Results may differ through this change in methodology, as random phone calls would eliminate participant fatigue in recording that occurs with food logs.

Different sample demographics would also be recommended for future research. As was previously discussed, college students tend to be limited in food choices. Also, as mentioned previously, it was not know how many participants were involved with meal plans. By knowing which participants are involved in meal plans may provide a better understanding of food choices among college students. If the sample was more varied in age and stage of life different results may be found. Different methods and places of recruitment may result in a better representation of all age groups and stages of life.

Summary

This chapter has discussed the results of the data analyses, and implications for health educators. Suggestions for future research have also been presented. It is apparent more research is needed in the field of intuitive eating to determine if there are differences in dietary habits between dieters and intuitive eaters.

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APPENDICES

Appendix A

Newspaper Advertisement

Come be a part of a research study designed to understand nutrient differences between groups. This research study is being conducted on Utah State University Campus to fulfill a master's thesis. If you are interested in participating and are within the ages of 18-65, contact Anne Banks via email at annewilson@cc.usu.edu. The study will be conducted over a two-week period. Those who complete the study will receive a free diet analysis and be entered in one of five drawings for a $20.00 gift certificate to Borders Bookstore.

Appendix B

Flyer

Come be a part of a research study

designed to understand dietary habits. The study will be

conducted over a two-week period.

If you are within the ages of 18-65 and are interested in

participating in the study and receiving a free diet analysis contact

Anne Banks via email at annewilson@cc.usu.edu.

There will also be five drawings for a $20.00 gift certificate to Borders

Bookstore at the end of the study for those who have completed the study.

Appendix C

Dept. of Health, P.E. and Recreation
7000 Old Main Hill
Logan UT 84322-7000
Tel: (435) 797-1497

INFORMED CONSENT
Nutrient Analyses of Intuitive Eaters as Compared to Dieters

Introduction/Purpose: Dr. Julie Gast in the Department of Health, Physical Education and Recreation and Anne Banks, a student researcher, are doing a research study to understand the nutrient analysis of intuitive eaters as compared to dieters associated with dietary patterns. The information provided will be analyzed for nutrient content and compared for differences between two groups. Participants will be divided into two groups based upon responses to the questionnaires received at the preliminary meeting.

Procedures:
If you agree to participate in this study, you will be given two surveys to fill out asking about your dietary habits. This may take about 45 minutes to complete. You will also be asked to keep track of the food you eat for two weeks. Two follow-up meetings will be held one week from today and one the following week which will last approximately one-half hour. These meetings will be held at the HPER auditorium, room 115, on Friday afternoons at 4:00 pm. At the conclusion of the study you will be eligible to receive a free personal nutrient assessment and you will be eligible to enter in one of five drawings to receive a $20.00 gift certificate to Borders Bookstore.

Risks:
Your participation in this study is considered minimal risk; however, there may be some added risks (e.g., your time involved in keeping a complete food log over the two-week period).

Benefits:
There may or may not be any direct benefit to you from these procedures. The researchers, however, may learn more about nutrient differences between groups. This information may be used to help determine future health recommendations and create better health education programs for individuals in the future.

Explanation & Offer to Answer Questions: Anne Banks has explained this research study to you and answered your questions. If you have other questions or research-related problems, you may contact either Professor Gast or Anne Banks by telephone or email; contact information is on the last page of this document.

Voluntary Nature of Participation and Right to Withdraw Without Consequence: Participation in research is entirely voluntary; you may refuse to participate or withdraw at any time without consequence. You may be withdrawn from this study by the researchers if the required surveys and food logs are not complete for this research.

Confidentiality:
Research records will be kept confidential, consistent with federal and state regulations. Your surveys and food logs will be kept confidential by assigning a code number to replace your name in the study. The code and data collected will be stored separately in a locked file cabinet in a locked room of Dr. Gast. Only the researchers will have access to this information. At the end of the study, the code will be destroyed.

IRB Approval Statement: The Institutional Review Board for the protection of participants in research has approved this study. If you have any questions or concerns about your rights you may contact them at (435) 797-1821.

Copy of Consent: You have been given two copies of this Informed Consent document. Please sign both copies and keep one for your file.

Researcher's Statement: "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Julie Gast, Ph.D.
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Anne W. Banks
Student Researcher
(801) 390-7534,
annewilson@cc.usu.edu

Signature of Participant: By signing below I agree to participate.

_____ _____
Signature of Participant Date

Appendix D

Food Frequency Questionnaire

FOOD FREQUENCY QUESTIONNAIRE

I would like to get some information about your typical diet during the year previous to this time. Please read through the list of foods one at a time. After you read through the food, please circle the intake level that represents the average intake over the year. This should include your total intake from meals and snacks. For example, if you had a glass of milk twice a day, then your average total would be two times per day. The choices for all foods are:

Never or < 1 per month
1-3 per month
2 per week
2-4 per week
5-6 per week
2 per day
2-3 per day
4-5 per day
6 + per day

Dairy Foods		
1.Skim or fat free milk (8 oz. glass) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**2. 1% or 2% milk (8 oz. glass)** Never or < 1 per month 1-3 per month 2 per week 2-4 per week 5-6 per week 2 per day 2-3 per day 4-5 per day 6 + per day	**3. Whole milk (8 oz. glass)** Never or < 1 per month 1-3 per month 3 per week 2-4 per week 5-6 per week 3 per day 2-3 per day 4-5 per day 6 + per day
4. Cream, e.g., coffee, whipped or sour cream (1 Tablespoon) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day	**5. Non-dairy coffee whitener (1 teaspoon)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day	**6. Frozen yogurt, sherbet or non-fat ice cream (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day

2-3 per day 4-5 per day 6 + per day	2-3 per day 4-5 per day 6 + per day	2-3 per day 4-5 per day 6 + per day
7. Ice Cream (1/2 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**8. Yogurt (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**9. Did you usually eat regular, low-fat or non-fat yogurt?** Regular Low fat Non-fat
10. Did you usually eat unsweetened or plain yogurt, yogurt sweetened with fruit or sugar, or artificially sweetened yogurt? Unsweetened (plain) Sweetened with fruit or sugar Artificially sweetened	**11. Cottage or ricotta cheese (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**12. Cream Cheese (1 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
13. Other cheese, e.g., American, Swiss, cheddar, etc. by itself or as part of a sandwich or dish (a slice or 1 oz. serving) Never or < 1 per month 1-3 per month 1 per week 2-4 per week	**14. What type of cheese did you usually eat?** Regular Low-fat or lite Non-fat	**15. Butter (small pat or teaspoon) added to food or bread; exclude use in cooking** Never or < 1 per month 1-3 per month 1 per week 2-4 per week

5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day		5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
16. Margarine (small pat or teaspoon), added to food or bread; exclude use in cooking Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**17. What form or margarine did you usually use? (Do not include spray type margarine)** Stick Tub Squeeze (liquid)	**18. What type of margarine did you usually use?** Regular Light spread Extra light spread Non-fat What specific brand (e.g., Land O' Lakes Country Morning Blend Light)? _____

FRUITS

19. Raisins (1 oz. or small pack) or grapes Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**20. Prunes (1/2 cup or 7 prunes)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**21. Bananas (1)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
22. Cantaloupe (1/4 melon) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day	**23. Avocado (1/2 fruit or 1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day	**24. Applesauce (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day

4-5 per day 6 + per day	4-5 per day 6 + per day	4-5 per day 6 + per day
25. Fresh apples or pears (1) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**26. Apple juice or cider (small glass)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**27. Oranges (1)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
28. Orange Juice (small glass) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**29. Grapefruit (1/2 fruit)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**30. Grapefruit juice (small glass)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
31. Other fruit juices (small glass) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**32. Strawberries, fresh, frozen or canned (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**33. Blueberries, fresh, frozen, or canned (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day

34. Peaches, apricots or plums (1 fresh, or 1/2 cup canned)	**35. In summary, how many servings of fruit did you usually eat, not counting juices?**
Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month
1 per week	1 per week
2-4 per week	2-4 per week
5-6 per week	5-6 per week
1 per day	1 per day
2-3 per day	2-3 per day
4-5 per day	4-5 per day
6 + per day	6 + per day

VEGETABLES		
36. Tomatoes (1)	**37. Tomato or V8 juice (small glass)**	**38. Tomato sauce (1/2 cup) e.g., spaghetti sauce**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
39. Salsa, picante or taco sauce (1/4 cup)	**40. Tofu or soybeans (3-4 oz.)**	**41. String Beans (1/2 cup)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
42. Broccoli (1/2 cup)	**43. Cabbage or cole slaw (1/2 cup)**	**44. Cauliflower (1/2 cup)**

Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
45. Brussels sprouts (1/2 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**46. Carrots, raw (1/2 carrot or 2-4 sticks)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**47. Carrots, cooked (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
48. Corn (1 ear or 1/2 cup frozen or canned) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**49. Peas, or lima beans (1/2 cup fresh, frozen, canned)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**50. Mixed vegetables (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
51. Beans or lentils, baked or dried (1/2 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week	**52. Dark orange (winter) squash (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week	**53. Eggplant, zucchini, or other summer squash (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week

5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
54. Yams or sweet potatoes (1/2 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**55. Spinach, cooked (1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**56. Spinach, raw as in salad (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
57. Kale, mustard, collard, or chard greens (1/2 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**58. Iceberg or head lettuce (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**59. Romaine or leaf lettuce (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
60. Celery (4" stick) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**61. Green, red or yellow sweet peppers (3 slices or 1/2 pepper)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**62. Onions as a garnish or in a salad (1 slice)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day

63. Onions as a vegetable, rings or soup (1 onion) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**64. In summary, how many servings of vegetables did you usually eat, not counting salad or potatoes?** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	

EGGS, MEAT, ETC.		
65. Egg beaters or egg whites only (1/2 cup or 1 egg white) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**66. Eggs whole, with yolk (1 egg)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**67. Bacon (2 slices)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
68. Chicken or turkey sandwich Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**69. Other chicken or turkey, with skin (4-6 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**70. Other chicken or turkey, without skin (4-6 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day

71. Beef or pork hot dogs (1)	**72. Chicken or turkey hot dogs (1)**	**73. Salami, bologna or other processed meat sandwiches (1 piece or slice)**
Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
74. Processed meats, e.g., sausage, kielbasa, etc. (2 oz. or 2 small links)	**75. Hamburger, lean or extra lean (1 patty)**	**76. Hamburger, regular (1 patty)**
Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
77. Beef, pork, or lamb as a sandwich or mixed dish, e.g., stew, casserole, lasagna, etc.	**78. Pork as a main dish, e.g., ham or chops (4-6 oz.)**	**79. Beef or lamb as a main dish, e.g., steak, roast (4-6 oz.)**
Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
80. Liver: beef, calf or pork (4 oz.)	**81. Liver: chicken or turkey (1 oz.)**	**82. Canned tuna fish (3-4 oz.)**

Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
83. Breaded fish cakes, pieces, or fish sticks (1 serving, store bought) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**84. Shrimp, lobster, scallops, or clams as a main dish (1 serving)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**85. Dark meat fish, e.g., mackerel, salmon, sardines, bluefish, swordfish (3-5 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
86. Other fish (3-5 oz.) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day		

BREADS, CEREALS, STARCHES		
87. Cold breakfast cereal (1 cup) Never or < 1 per month	**88. What brand and type of cold breakfast cereal did you usually eat?** Specify brand & type (e.g., Kellogg's	**89. Cooked oatmeal/cooked oat bran (1 cup)** Never or < 1 per month

1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Rice Krispies) _____ _____	1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
90. Other cooked breakfast cereal (1 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**91. White bread (slice), including pita bread** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**92. Dark bread (slice), including wheat pita bread** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
93. Bagels, English muffins or rolls (1 whole) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**94. Muffins (regular) or biscuits (1)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**95. Brown rice (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
96. White rice (1 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day	**97. Pasta, e.g., spaghetti, noodles, etc. (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day	**98. Tortillas (1)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day

2-3 per day 4-5 per day 6 + per day	2-3 per day 4-5 per day 6 + per day	2-3 per day 4-5 per day 6 + per day
99. Other grains, e.g., bulgur, kasha, couscous, etc. (1 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**100. Pancakes or waffles (3 pieces)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**101. French fired potatoes (small order or 1/2 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
102. Potatoes, bakes, boiled (1) or mashed (1 cup) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**103. Potato chips or corn chips (small bag or 1 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**104. Crackers, Triscuits, Wheat Thins (5)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
105. Pizza (2 slices) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day		

BEVERAGES

106. Low-calorie colas, e.g., Diet Coke with caffeine (1 glass, bottle, can)	**107. Low-calorie caffeine-free soda (1 glass, bottle, can)**	**108. Other low-calorie carbonated beverages, e.g., Diet 7-Up, Fresca, diet ginger ale (1 glass, bottle, can)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
109. Coke, Pepsi, or other cola with sugar (1 glass, bottle, can)	**110. Caffeine free Coke, Pepsi, or other colas with sugar (1 glass, bottle, can)**	**111. Other carbonated beverages with sugar, e.g., 7-Up, root beer (1 glass, bottle, can)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
112. Hawaiin Punch, lemonade, or other non-carbonated fruit drinks (1 glass, bottle, can)	**113. Regular beer (1 glass, bottle, can)**	**114. Light beer e.g., Bud Light (1 glass, bottle, can)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day

115. Red wine (4 oz. glass)	**116. White wine (4 oz. glass)**	**117. Liquor, e.g., whiskey, gin, etc. (1 drink or 1 oz. shot)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
118. Plain water, bottled or tap including mineral water and soda water (1 cup or glass)	**119. Herbal tea (1 cup)**	**120. Tea (1 cup), Not herbal tea**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
121. Decaffeinated coffee (1 cup)	**122. Coffee with caffeine (1 cup)**	
Never or < 1 per month	Never or < 1 per month	
1-3 per month	1-3 per month	
1 per week	1 per week	
2-4 per week	2-4 per week	
5-6 per week	5-6 per week	
1 per day	1 per day	
2-3 per day	2-3 per day	
4-5 per day	4-5 per day	
6 + per day	6 + per day	

SWEETS, BAKED GOODS, MISCELLANEOUS		

123. Pure chocolate candy bar or packet (e.g., Hershey's M&M's)	**124. Other mixed candy bars, (e.g., Snickers, Milky Way, Reeses)**	**125. Candy without chocolate (e.g., 1 pack mints, Lifesavers)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
126. Jams, jellies, preserves, syrup, or honey (1 tablespoon)	**127. Peanut butter (1 tablespoon)**	**128. Popcorn (1 cup)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
129. Pretzels (1 oz., or small bag)	**130. Cookies, home baked (1)**	**131. Cookies, ready made (1)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week
2-4 per week	2-4 per week	2-4 per week
5-6 per week	5-6 per week	5-6 per week
1 per day	1 per day	1 per day
2-3 per day	2-3 per day	2-3 per day
4-5 per day	4-5 per day	4-5 per day
6 + per day	6 + per day	6 + per day
132. Brownies (1)	**133. Doughnuts (1)**	**134. Cake, homemade (slice)**
Never or < 1 per month	Never or < 1 per month	Never or < 1 per month
1-3 per month	1-3 per month	1-3 per month
1 per week	1 per week	1 per week

2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
135. Cake, <u>ready made</u> (slice) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**136. Pie, <u>homemade</u> (slice)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**137. Pie, <u>ready made</u> (slice)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
138. Sweet roll, coffee cake or other pastry, <u>homemade</u> (serving) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**139. Sweet roll, coffee cake or other pastry, <u>ready made</u> (serving)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**140. Peanuts (small packet or 1 oz.)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
141. Other nuts (small packet or 1 oz.) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day	**142. Oat bran, added to foods (1 tablespoon)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day	**143. Other bran, added to food (1 tablespoon)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day

6 + per day	6 + per day	6 + per day
144. Wheat germ (1 tablespoon) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**145. Chowder or cream soup (1 cup)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**146. Ketchup or red chili sauce (1 tablespoon)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
147. Salt added to table (1 shake) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**148. If you added sugar to your beverages or food, how many teaspoons of sugar did you add each day?** Teaspoons_____	**149. Nutrasweet or Equal (1 packet) NOT Sweet N' Low** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
150. Garlic (1 clove or 4 shakes) Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**151. Low fat mayonnaise/fat free mayonnaise (2 Tablespoons)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	**152. Regular mayonnaise (2 Tablespoons)** Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day

153. Salad dressing (2 Tablespoons)	**154. Did you usually use nonfat, lowfat or regular salad dressing?**	**155. Olive oil added to food or bread (1 Tablespoon); exclude use in cooking**
Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day	Nonfat Low-fat Regular What brand and type of salad dressing did you usually use? _____ _____	Never or < 1 per month 1-3 per month 1 per week 2-4 per week 5-6 per week 1 per day 2-3 per day 4-5 per day 6 + per day
156. How much of the visible fat on your beef, pork or lamb did you remove before eating?	**157. How often did you eat food fried, stir-fried in oil, or sauteed at home?**	**158. What kind of fat or oil did you usually use for frying, stir-frying or sauteeing at home?**
Don't eat meat Remove visible fat Remove most Remove small part of fat Remove none	Never (GO TO 159) Less than once a week Once per week 2-4 times per week 5-6 times per week Daily	Don't fry Real butter Margarine (SPECIFY) Olive oil Vegetable oil (SPECIFY) Vegetable shortening Lard/bacon fat Pam type spray BRAND AND TYPE OF MARGARINE OR VEGETABLE OIL _____
159. What kind of fat or oil was usually used for baking at home?	**160. How often did you eat deep fried food away from home or as take out (e.g., french fries, fried chicken, fish, clams, shrimp, etc.)?**	
Don't bake Real butter Margarine (SPECIFY) Olive oil Vegetable oil (SPECIFY) Vegetable shortening	Never Less than once a week Once per week 2-4 times per week 5-6 times per week Daily	

Lard/bacon fat Pam type spray BRAND AND TYPE OF MARGARINE OR VEGETABLE OIL _____		

161. Are there any other foods not mentioned up to now that you usually ate <u>at least once per week</u>?
Include for example: Pate, cream sauce, custard, radishes, fava beans, coconut, mango, horseradish, parsnips, rhubarb, papaya, dried apricots, dates, figs. (Do not include dry spices and do not list something that has been listed in the previous sections.)

YES
NO (Go to 165)

162. What were the other foods that you usually ate at least once per week?	**163. What was your usual serving size for those foods?**	**164.How many times per week did you eat it?**
a. _____	a. _____	a. _____
b. _____	b. _____	b. _____
c. _____	c. _____	c. _____

165. Did you follow a special diet?	**166. Was the diet prescribed by a nurse, physician, or dietician or was it chosen by you?**	**167. For how many years had you been following this diet?**
YES NO (you're finished)	PHYSICIAN NURSE DIETICIAN SELF-PRESCRIBED	Number of years _____

168. What kind of diet did you follow?

Weight reduction (low calorie)	Yes	No
Low cholesterol	Yes	No
Low sodium	Yes	No
Diabetic	Yes	No
Low fat	Yes	No
Low triglyceride	Yes	No
Ulcer	Yes	No

High Potassium	Yes	No
Other Specify_____	Yes	No

Appendix E

Intuitive Eating Scale

IES
After honest consideration, please indicate how strongly you agree with each of the following statements.

1 2 3 4 5
Strongly Disagree Somewhat Disagree Neutral Agree Somewhat Strongly Agree

1. Without really trying, I naturally select the right types and amounts of food to be healthy. _____
2. I generally count calories before deciding if something is OK to eat. _____
3. One of my main reasons for exercising is to manage my weight. _____
4. I seldom eat unless I notice that I am physically hungry. _____
5. I am hopeful that I will someday find a new diet that will actually work for me. _____
6. The health and strength of my body is more important to me than how much I weigh. _____
7. I often turn to food when I feel sad, anxious, lonely, or stressed out. _____
8. There are certain foods that I really like, but I try to avoid them so that I won't gain weight. _____
9. I am often frustrated with my body size and wish that I could control it better. _____
10. I consciously try to eat whatever kind of food I think will satisfy my hunger the best. _____
11. I am afraid to be around some foods because I don't want to be tempted to indulge myself. _____
12. I am happy with my body even if it isn't very good looking. _____
13. I normally eat slowly and pay attention to how physically satisfying my food is. _____
14. I am often either on a diet or seriously considering going on a diet. _____
15. I usually feel like a failure when I eat more than I should. _____
16. After eating, I often realize that I am fuller than I would like to be. _____
17. I often feel physically weak and hungry because I am dieting to control my weight. _____
18. I often put off buying clothes, participating in fun activities, or going on vacations (hoping I can get thinner first). _____
19. When I feel especially good or happy, I like to celebrate by eating. _____
20. I often find myself looking for something to eat or making plans to eat—even when I'm not really hungry. _____
21. I feel pressure from those around me to control my weight, or to watch what I eat. _____
22. I worry more about how fattening a food might be, rather than how nutritious it might be. _____
23. It's hard to resist eating something good if it is around me, even if I'm not very hungry. _____
24. On social occasions, I feel pressure to eat the way those around me are eating—even if I'm not hungry. _____

25. I honestly don't care how much I weigh—as long as I'm physically fit, healthy, and can do the things I want. _____
26. I feel safest if I have a diet plan, or diet menu, to guide my eating. _____
27. I mostly exercise because of how good it makes me feel physically. _____

IES Scoring Instructions:

Reverse Score the following items (1=5, 2=4, 3=3, 4=2, 5=1):

2, 3, 5, 7, 8, 9, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26

After reverse scoring the appropriate scale items, add points for each subscale.

# Intrinsic	# Extrinsic	# Anti-Dieting	# Self-Care
1 _____	7 _____	2 _____	6 _____
4 _____	16 _____	3 _____	12 _____
10 _____	19 _____	5_____	25_____
13 _____	20 _____	8_____	27_____
	23 _____	9_____	
	24_____	11_____	
		14_____	
		15_____	
		17_____	
		18_____	
		21_____	
		22_____	
		26_____	
Total=_____	Total=_____	Total=_____	Total=_____

Email from Dr. Hawks granting permission to use the scale

Hi Anne,

Here is the current scale. Please feel free to use it.

Best,

Steve

Steven R. Hawks, EdD, CHES
Professor of Health Science
229L Richards Building
Brigham Young University
Provo, UT 84602

Appendix F

Food Log

FOOD AND AMOUNT (Remember food preparation)	
BREAKFAST _____ Brand _____ Serving Size _____ Servings _____ _____ _____	SNACK _____ Brand _____ Serving Size _____ Servings _____ _____ _____
LUNCH _____ Brand _____ Serving Size _____ Servings _____ _____ _____	SNACK _____ Brand _____ Serving Size _____ Servings _____ _____ _____
SUPPER _____ Brand _____ Serving Size _____ Servings _____ _____ _____	SNACK _____ Brand _____ Serving Size _____ Servings _____ _____ _____
OTHER FOODS OR DRINKS THROUGHOUT THE DAY (Remember Brand, Serving Size, Servings) _____ _____ _____	

Appendix G

Food Log Completion Instructions

It is vital the food logs are completed with detail. This information is important to receive a complete nutritional analysis. Details that are needed on the food log include: brand name, serving size and how many servings, how the food was prepared if you cooked it yourself (e.g. fried in a tablespoon of butter and salt added). These food logs will be collected at the end of each week of the study at our follow-up meetings. Upon completion of all the food logs your name will be entered into a drawing for one of five gift certificates of $20.00 to Borders Bookstore.

Appendix H

Demographic Sheet

These questions are not intended to connect with you with your surveys or food logs. The purpose of these questions is to determine suggested caloric intake. Please answer the questions honestly.

Gender_____

Age_____

Physical Activity Level (circle one):

Minimal (less than 30 minutes, less than 3 times per week)

Moderate (30 minutes, 3 times per week)

Intense (at least 30 minutes, more than 3 times per week)

High Intense (at least 60 minutes, almost every day of the week)