AN ABSTRACT OF THE THESIS OF

Patricia D. Gum (name of student) for the Master of Science (degree)

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Title: EATING HABITS, FOOD PREPARATION AND FOOD PURCHASING HABITS OF SUCCESSFUL, OBESE AND NORMAL WEIGHT SUBJECTS

Abstract approved: _____

The eating habits, food preparation and food purchasing habits of successful*, obese and normal weight subjects were investigated in this study. A total of four hundred ninety-seven subjects participated in the study and a sixty-four-item questionnaire was utilized to evaluate eating habits, food preparation and food purchasing habits.

A one-way between subjects analysis of variance was employed to examine possible significant differences. The Scheffe test, a multiple comparison test, was employed to identify specific differences between the groups. A T test was also employed to calculate differences between paired groups for each individual item.

The results of the analysis of variance revealed significant differences in food preparation and food purchasing habits when

*Successful refers to those subjects formerly in a weight reduction program who successfully lost weight.

comparing the successful, obese and normal weight groups. Further analysis identified significant differences between the successful and obese groups in their food purchasing habits. When comparing paired responses to each item, analyses revealed the following: significant differences occurred in 21.9 percent of the responses when comparing obese and normal subjects; significant differences occurred in 23.4 percent of the responses when comparing successful and obese subjects; and significant differences occurred in 42.2 percent of the responses when comparing successful and normal subjects.

It was concluded that differences existed in the food preparation and food purchasing habits of successful, obese and normal weight subjects, particularly between successful and obese subjects. It was recommended that further research include such variables as age, sex and level of education, as well as subjects chosen from different diet institutions. It was also suggested that future research give more attention to food preparation and purchasing habits.

# EATING HABITS, FOOD PREPARATION AND FOOD PURCHASING HABITS OF SUCCESSFUL, OBESE AND NORMAL WEIGHT PEOPLE

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by

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# Chapter 1

## INTRODUCTION

In Chapter 1, the need for research in the factors that contribute to obesity are examined. Variations are investigated, based on a written questionnaire, of groups of randomly chosen males and females from ten to over seventy-five pounds above the normal weight. Variations in eating habits, food preparation and food purchasing are compared to a similar control group of males and females in the normal weight range. A group of subjects who successfully lost from eleven to over seventy-five pounds are also compared to the normal group. The theoretical formulation, the specific statement of the problem and hypothesis, and the purpose and significance of the study are discussed. Definitions of terms and limitations imposed on the study are also stated.

### Theoretical Formulation

At least twenty-five percent of the American adult population is considered to be obese. Obesity has been implicated as an underlying factor in a wide variety of serious physical disorders.[1]

In only a small percentage of cases have metabolic and endocrine imbalances accounted for obesity. In most cases the key

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[1]Ina Brenda Weitzman, "Weight Loss Maintenance: Personality Factors and Demographic Determinants," Dissertation Abstracts International, 37, October, 1976, pp. 1977-1978.

determinants have appeared to be familial and cultural associations, as well as psychological factors. Learned responses have played a major role; some persons have apparently learned to overeat.[2] It was with this last area that this study was concerned.

Twenty-four obese and twenty-four normal weight undergraduates ate a test meal while seated before a mirror that was either covered or uncovered. Subjects in both groups ate less when seated before the uncovered mirror which was designated an increased awareness condition. While both groups ate less in the increased awareness condition, previous research demonstrated that obese individuals tended to be lower than normals in attention to or awareness of eating.[3]

While hunger and its satisfaction determined the eating patterns of normal weight persons, obese people did not use these same internal cues. They were much more sensitive to external, environmental cues.

In one test in this area, Schachter, Goldman and Gordon asked obese and normal weight subjects to sample five crackers, purportedly in order to rate the taste of the crackers. Half of each group had missed the meal prior to the experiment; half had not. The number of crackers the subjects ate were recorded.

Results of this test showed that subjects of normal weight ate according to their own internal states. Those who had missed their meal were hungry and ate more crackers than those who had not missed a meal. However, all obese subjects, whether they had eaten prior to the

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[2]James C. Coleman, Abnormal Psychology and Modern Life, (4th ed,: Glenview: Scott, Foresman, and Company, 1972), p. 513.

[3]Patricia Pliner and Gerard Iuppa, "Effects of Increasing Awareness on Food Consumption in Obese and Normal Weight Subjects," Addictive Behaviors, 3, 1978, pp. 19-24.

test or not, ate the same amount.[4] They apparently may have been prompted to eat again simply by the presence of food, regardless of how recently or amply they had eaten.

In a further study of how external cues affected obese and normal weight subjects, Decke gave vanilla milk shakes to obese and normal subjects. Half the milk shakes were laced with bitter quinine. Normal subjects consumed an average of 10.6 ounces of the good tasting milk shake and 6.4 ounces of the bad tasting one. However, the obese subjects consumed 13.9 ounces, on the average, of the good tasting milk shake and only 2.6 ounces of the bad tasting one. Obese subjects were influenced by the taste of the milk shake, an external cue, almost three times as much as normals were.[5]

## The Problem

"The treatment of obesity by traditional weight loss procedures are no more effective now than they were fifteen years ago."[6] In an effort to find effective weight control methods, recent research studies have applied behavior modification techniques to the problem. The most efficient of these techniques, the one that achieved the most promising results directly taught the modification of eating patterns. Weight loss reported was not large, though, and individual differences in the

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[4]S. Schachter, R. Goldman, and R. Gordon, "Effects of Fear, Food Deprivation and Obesity on Eating," Journal of Personality and Social Psychology, 10, 1968, pp. 107-116, cited by Hal R. Arkes and John P. Garske, Psychological Theories of Motivation, (Monterey: Brooks/Cole Publishing Company, 1977), pp. 24-27.

[5]Ibid.

[6]Gloria R. Leon, "Current Directions in the Treatment of Obesity," Psychological Bulletin, 7, July, 1976, pp. 557-558.

effectiveness of the particular behavior modification techniques were noted.[7] There was no emphasis on the specific kinds of food obese people purchased and therefore had available to them, or how that food was prepared, despite other research that presented the possibility that obese people were sensitive to external cues.

Statement of the Problem

Is there a significant difference in the eating habits (as measured by a written questionnaire) of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range?

Is there a significant difference in the food preparation habits (as measured by a written questionnaire) of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range?

Is there a significant difference in the food purchasing habits (as measured by a written questionnaire) of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range?

Is there a significant difference in the eating habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

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[7]Ibid.

Is there a significant difference in the food preparation habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

Is there a significant difference in the food purchasing habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

Is there a significant difference in the eating habits (as measured by a written questionnaire) of subjects presently overweight by the following amounts: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

Is there a significant difference in the food preparation habits (as measured by a written questionnaire) of subjects who are presently overweight by the following amounts: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

Is there a significant difference in the food purchasing habits (as measured by a written questionnaire) of subjects who are presently overweight by the following amounts: eleven to twenty pounds,

twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over?

Is there a significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who are presently obese and subjects who are normal weight?

Is there a significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who are presently obese and subjects who have successfully lost weight?

Is there a significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who have successfully lost weight and subjects who are normal weight?

## Statement of the Hypotheses
(Null Form)

There is no significant difference in the eating habits (as measured by a written questionnaire) of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range.

There is no significant difference in the food preparation habits (as measured by a written questionnaire) of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range.

There is no significant difference in the food purchasing habits (as measured by a written questionnaire) of the following

groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range.

There is no significant difference in the eating habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the food preparation habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the food purchasing habits (as measured by a written questionnaire) of subjects who have successfully lost the following amounts of weight: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the eating habits (as measured by a written questionnaire) of subjects who are presently overweight by the following amounts: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the food preparation habits (as measured by a written questionnaire) of subjects who are presently overweight by the following amounts: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the food purchasing habits (as measured by a written questionnaire) of subjects who are presently overweight by the following amounts: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

There is no significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who are presently overweight and subjects who are in the normal weight range.

There is no significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who are presently overweight and subjects who have successfully lost weight.

There is no significant difference in the eating habits, food preparation and food purchasing habits (as measured by a written questionnaire) of subjects who have successfully lost weight and subjects who are in the normal weight range.

Assumption of the Study

This study was designed to investigate the eating, food preparation and food purchasing habits of the following groups: subjects who have successfully lost weight; subjects who are presently overweight; and subjects who are in the normal weight range. It was assumed that this study's population sample would represent the successful, obese and normal weight people. This assumption allowed for proper treatment and analysis of data in the following chapters. It was also assumed that the eating habits, food preparation and food purchasing habits of people were learned habits and that these habits could be measured and clarified by means of a written questionnaire.

Purpose of the Study

The purpose of this study was to investigate and determine the eating habits, food preparation and food purchasing habits of successful dieters, obese and normal weight people. The weight groups were established by means of an insurance company's standardized weight scale. The eating, food preparation and food purchasing habits were determined by means of a written questionnaire.

Significance of the Study

Obesity has been found to be a contributing factor in high blood pressure, heart disease and other physical ailments.[8] Researchers have studied the effects of behavior modification techniques and found the precedures to be effective in weight reduction. They have also found external cues were more influential on obese people than they

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[8]Coleman, op. cit., p. 513.

were on normal weight people.[9] If a relevant difference existed between the eating habits, food preparation and food purchasing habits of successful dieters, obese people and normal weight people, it would have direct implications in developing treatment programs.

To determine if a relevant difference existed, this study investigated the eating habits, food preparation and food purchasing habits of successful dieters, obese and normal weight people. Data were collected to test the hypothesis that there was no significant difference between successful dieters, obese people and normal weight people in these areas.

## Definitions of Terms

### Eating Habits

The following items were included in the area of eating habits: number of meals eaten each day; duration of each meal; volume of food eaten at each meal; and rate of chewing and number of bites.

### Food Preparation

The following items were included in the area of food preparation: methods of cooking; preparation of menus and meal plans; use of seasonings; and use of convenience foods.

### Food Purchasing

The following items were included in the area of food purchasing: specific food items bought; time of day shopping occurred;

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[9]Arkes and Garske, op. cit., pp. 24-27.

preparation of shopping lists and budgets, and adherence to those lists or budgets.

Obesity

An excess accumulation of body fat.[10]

## Limitations of the Study

This study was limited to the measurement of eating habits, food preparation and food purchasing of subjects identified as successful dieters, overweight and normal weight subjects. It was further limited by the amount of research done in the areas of food preparation and food purchasing. Most studies with implications for food preparation and food purchasing have concentrated on food preferences and then, on observed food eaten only. It was additionally limited by the type of studies conducted on eating habits which have been applied research programs for obese subjects only.

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[10]Coleman, op. cit., p. 513.

## Chapter 2

## REVIEW OF RELATED LITERATURE

In Chapter 2, the research on eating habits and food preferences of obese and normal weight people is reviewed. Only recently has research turned to the study of how obese subjects differ from normal weight subjects in these areas; results support the hypothesis that differences do exist. Further research is needed to identify these differences.

### Eating Patterns

#### Preliminary Studies on Eating Patterns and Weight Loss

Research in the past ten years built up consistent evidence that obesity was related to inappropriately learned behaviors and was responsive to control by behavior modification techniques. Fowler and others, basing their study on behavior modification principles, tested the results of weight loss from a change in food intake patterns. Subjects counted mouthfuls as they were taken and established individual daily limits of food according to their weekly weight changes. Forty-three out of fifty-eight subjects reported sustained weight loss in an eight month period.[11]

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[11]Roy S. Fowler and others, "The Mouthful Diet: A Behavioral Approach to Overeating," Rehabilitation Psychology, 19, Fall, 1971, pp. 98-106.

Shipley and Fry tested the effects of Self-Monitoring versus a Traditional method of reduction in calories. The Self-Monitoring Group used goal lists and postcard records to note changes in weight and eating habits. At the end of the study, the Self-Monitoring Group showed greater awareness of and change in their problem eating behavior. It was concluded that weight loss was greatly helped by the self-monitoring of eating habits.[12]

Shulman randomly assigned sixty-seven overweight female hospital employees to one of five groups. Group One was a Time Condition in which subjects gradually slowed down eating patterns by extending meal lengths. Group Two was a Mouthful Condition in which subjects gradually decreased quantity of food eaten by eating less mouthfuls. Group Three was a Time-Mouthful Condition in which subjects concentrated on both the Time Condition and Mouthful Condition. Group Four was an Attention-Placebo Condition in which subjects were given attention and reinforcement only. Group Five was a No-Treatment Control Condition. The results indicated that timing and counting mouthfuls had a strong relationship to changing eating habits and weight loss.[13]

These early studies provided researchers with the idea that teaching the obese person new eating habits might be more effective than traditional methods of dieting. Subsequent research explored this area.

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[12]L. Loreen Shipley and Maurine Fry, "Two Approaches to Weight Control," Rehabilitation Psychology, 19, Winter, 1972, pp. 169-171.

[13]James M. Shulman, "A Comparison of Behavioral Approaches in Developing Control of Overeating," Dissertation Abstracts International, 34, May, 1972, p. 5692.

Bellack, Rozensky, and Schwartz developed a program of self-control through awareness. Four groups of subjects were used: a Premonitoring Group that recorded eating prior to actual consumption; a Nonmonitoring Group that did not record eating; a Posteating Monitoring Group that recorded consumption after eating; and a Waiting-list Control Group. Results indicated the Premonitoring Group lost the most weight.[14]

Mahoney, Moura and Wade studied the effects of reward and punishment techniques. In Group One, Self-Reward, subjects awarded themselves a portion of a deposit they had made if they had a positive change in eating habits or loss of weight. In Group Two, Self-Punishment, subjects fined themselves a portion of their deposit for weight gain or no change in eating habits. In Group Three, Self-Reward/Self-Punishment, subjects combined the above two techniques. In Group Four, Self-Monitoring, subjects recorded weight and eating habits. Group Five was an Information Control. Results indicated the Self-Reward subjects showed the greatest improvement.[15]

Jeffrey, Christensen and Pappas developed a similar study in which money or valuables were won or forfeited when weight was lost or not lost. In the pilot study, mean weight loss was twenty-seven

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[14]Alan S. Bellack and others, "Self-Monitoring as an Adjunct to a Behavioral Weight Reduction Program," Proceedings of the 81st Annual Convention of the American Psychological Association, 8, 1973, pp. 545-546.

[15]Michael J. Mahoney, Nanci G. Moura and Terry C. Wade, "Relative Efficacy of Self-Reward, Self-Punishment and Self-Monitoring Techniques for Weight Loss," Journal of Consulting and Clinical Psychology, 40, June, 1973, pp. 404-407.

pounds. In the research study with forty-three subjects, mean weight loss was 16.39 pounds.[16]

Harris and Hallbauer compared three weight control programs. In one program, a written control and other self-control behavior modification techniques for changing eating habits were used. In the second program, a similar approach on eating habits was used and added exercise to the program. The third program was a control group.

Fifty obese subjects in all three programs lost weight in the twelve week program with no significant differences. However, at a seven-month follow-up, the subjects in the two behavior modification groups lost more than those in the control group. Further, subjects in the Eating plus Exercise Group lost more than those in the Eating Awareness Only Group.[17]

Quick, in a study to determine the effectiveness of various types of self-monitoring in the control of obesity found no significant differences between several methods of Self-Monitoring versus No-Self-Monitoring Groups. There was a significant difference, though, between all Behavior Control Groups and a No-Treatment Control Group. There was a tendency toward greater weight loss among subjects who considered

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[16]D. Balfour Jeffrey, Edwin R. Christensen and James P. Pappas, "Developing a Behavioral Program and Therapist Manual for the Treatment of Obesity," Journal of the American College Health Association, 21, June, 1973, pp. 455-459.

[17]Mary B. Harris and Erin S. Hallbauer, "Self-Directed Weight Control through Eating and Exercise," Behaviour Research and Therapy, 11, November, 1973, pp. 523-529.

self-monitoring to be important. Also, there was more weight lost by highly educated subjects and those who prepared their own food.[18]

Thus the groundwork was laid for creating effective weight reduction programs based on teaching the obese person new eating habits. Subsequent research focused on comparing various techniques to identify the best methods for success.

Behavior Modification Techniques and Weight Control

Shapiro, in a comparison of behavior modification techniques, studied the effectiveness of Self-Praise to a Token Reinforcement System. A group of seven through twelve year old overweight children was used. The program involved group support, record keeping, and stimulus control.

Among the techniques explored were self-praise and encouragement, weekly behavior checklists on eating habits, exercise and calorie intake, plus parental involvement. Therapist monitoring was given some groups through additional sessions. Results showed a significant weight loss for all Behavioral Treatment Groups over Control Groups.[19]

Parks instituted a program centering on the reeducation of eating habits of children. The program concentrated on weight maintenance rather than weight loss with close parental participation

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[18]Ellen K. Quick, "Self-Monitoring and the Control of Over-eating," Dissertation Abstracts International, 35, December, 1974, pp. 3032-3033.

[19]Joan R. Shapiro, "A Comparison of Various Reward and Monitoring Procedures in the Behavioral Treatment of Overweight Children," Dissertation Abstracts International, 36, May, 1976, pp. 5816-5817.

involved. Nine of the ten experimental subjects maintained or lost weight during the treatment period as compared to a control group which actually gained weight during the same period.[20]

In a study of Self-Reinforcement and Behavioral Contracting procedures, Schwartz found no significant differences among eighty-nine subjects assigned to nine treatment conditions. All subjects registered significant weight losses. The inability to find a significant difference was suggested to be the subjects' self-reported failures to follow their procedures consistently. This information was obtained from a questionnaire given at the end of treatment. There was a relationship between weight loss and self-reinforcement, evaluation, and monitoring; these procedures were effective for those subjects who chose to use them.[21]

In another study to identify the most effective behavioral techniques for weight reduction, White encountered the possibility of an operant contingency factor. Four groups were used. All four groups lost weight during the eight week treatment period with no statistically significant differences between treatment conditions. An interesting finding, though, was the low dropout rate, only two out of seventy-two

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[20]Jim T. Parks, "Weight Control in Children by Means of Behavioral Controls," Dissertation Abstracts International, 36, June, 1976, p. 6395.

[21]Jeffrey S. Schwartz, "An Evaluation of the Contribution of a Variety of Self-Reinforcement Techniques and a Behavioral Contracting Procedure to a Therapeutic Weight Loss Program," Dissertation Abstracts International, 36, January, 1976, pp. 3625-3626.

participants. It was suggested that the operant contingency, $60.00 deposit, was responsible for this.[22]

Silverman tested the effectiveness of two Self-Management procedures on weight reduction. At the end of treatment, no significant differences were found between the two experimental conditions and the Placebo-Information Control Group. The Control Group also showed significant losses in percentage over weight.

Several explanations were postulated for the failure to achieve a significant difference between groups. Among the reasons given were the brevity of the treatment, the lack of reinforcement for achieving new behaviors, and the possibility that once a commitment to lose weight had been made, this influenced the Placebo-Attention subjects.[23]

Saccone and Israel had forty-eight overweight women and one overweight man participate in a behavioral weight-reduction program. The study evaluated the relative effectiveness of four monetary reinforcement conditions: Reinforcement by Therapist for Change in Eating Behavior, Reinforcement by Significant Other in the Client's Family for Weight Loss, or Reinforcement by Significant Other for Change in Eating Behavior.

The results, in terms of weight loss, indicated that the basic program plus monetary reinforcement by a Significant Other for Eating Behavior Change was more effective than the basic program alone. It was

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[22]Stephen A. White, "A Comparison of Behavioral Techniques for the Treatment of Obesity," Dissertation Abstracts International, 36, February, 1976, p. 4187.

[23]Howard D. Silverman, "The Differential Effectiveness of Two Self Management Procedures on Weight Reduction," Dissertation Abstracts International, April, 1976, p. 6489.

not, however, significantly more effective than the Therapist as Reinforcer. Nevertheless, and more pertinent to the present study, reinforcement of change of eating behavior was more effective than weight loss as the goal. The study suggested that reinforcement by significant others plus emphasis on behavior change as the target of reinforcement may be the most effective combination for weight loss.[24]

Musante described an on-going outpatient program at the Dietary Rehabilitation Clinic at Duke University. The program includes a 700 calorie diet served in the dining room of the clinic where patients eat three meals each day. There is a behavior modification program where daily dietary, behavioral and medical supervision is given. There is a patient education lecture series, physical activity and a general medical program. Treatment is designed to help each patient learn new eating habits, learn about foods and achieve the goal of changed behavior necessary for weight loss and maintenance of general good health. Median lengths of treatment are 10.4 weeks for females and 8.2 weeks for males. Over half have lost twenty or more pounds. "It is stressed that individual variability and the fact that patients must vary their length of treatment time are important."[25]

Kelley and Curran compared a Self-Control program of behavior modification techniques with a program aimed at decreasing eating

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[24]Anthony J. Saccone and Allen C. Israel, "Effects of Experimenter versus Significant Other Controlled Reinforcement and Choice of Target Behavior on Weight Loss," Behavior Therapy, 9, March, pp. 271-278.

[25]Gerard J. Musante, "The Dietary Rehabilitation Clinic: Evaluative Report of a Behavioral and Dietary Treatment of Obesity," Behavior Therapy, 7, March, 1976, pp. 198-204.

behavior as a response to emotional states. The Self-Control program emphasized modifying external environmental-eliciting cues.

The Self-Control Groups lost significantly more pounds than the other groups. However, on follow-up, the Self-Control Groups did not continue their superiority. It was suggested that some continual treatment contact may be necessary for continued weight loss maintenance by Self-Control subjects.[26]

Epstein and others observed the bite rate, sip rate and other activities of six 7-year-old children, three obese and three nonobese. Observation occurred at lunchtime over a six-month period. They devised a program for decreasing consumption by decreasing bite rate; the children simply put their eating utensils down between bites. The result was a significant reduction in the amount of food the children consumed.[27]

Balch and Balch established a behaviorally oriented weight reduction and control program concentrating on increasing awareness of eating habit problems, establishing feedback mechanisms, developing social and material reinforcements, and stimulating nutritional management and exercise. Fifty overweight undergraduates, forty-seven females and three males, were studied. Subjects averaged 25.6 percent in obesity. After a nine-week treatment period, average weight loss was between 7 and 9.7 pounds. The results from group differences

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[26]Ann H. Kelley and James P. Curran, "Comparison of a Self-Control Approach and an Emotional Coping Approach to the Treatment of Obesity," Journal of Consulting and Clinical Psychology, 44, August, 1976, p. 683.

[27]Leonard H. Epstein and others, "Descriptive Analysis of Eating Regulation in Obese and Nonobese Children," Journal of Applied Behavior Analysis, 9, Winter, 1976, pp. 407-415.

indicated that collecting a fee and returning the money at a rate based on attendance was an effective factor in the treatment program.[28]

The results also showed that paraprofessionals were as successful as professionals in supervising treatment groups. The program was staffed by a psychologist, a mental health social worker, and two registered nurses.

Incidentally, participation in paraprofessional diet groups was found to offer additional aids to successful dieting. Included in these latent services were: encouragement to let off steam; express fears and worries and face tensions in the company of sympathetic others; practical knowledge from the experiences of others; as well as, support and helpful solutions to problems.[29]

Once again, the research consistently demonstrated that behavior modification techniques were effective for the control of obesity. However, the specific factors pertinent to individual success remained tenaciously inconsistent. Definite trends were found, though.

External reinforcement, whether it was in the form of money, therapist praise or encouragement from significant others, self-monitoring records, and the emphasis on changing behaviors instead of pounds lost as the goal for that reinforcement, all appeared to be beneficial. It suggested the possibility that the obese person needed the additional motivation of others to be successful at losing weight.

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[28]Philip Balch and Koreen Balch, "Establishing a Campus-wide Behavioral Weight Program through a University Student Health Service: The Use and Training of Health Service Personnel as Behavioral Weight Therapists," Journal of American College Health Association, December, 1976, pp. 148-152.

[29]U. Hofstra, "Latent Social Services in Group Dieting," Social Problems, 23, October, 1975, pp. 59-69.

Further, it supported the research on obese individuals who were more easily influenced by external cues.

Coates, in another study to determine effective behavioral procedures, also arrived at inconclusive results. On evaluation of the findings, he concluded:

> . . . not all subjects need all treatment strategies. It might be more cost-effective and therapeutically efficient to analyze specific client needs and tailor treatment strategies to the specific deviant behavior patterns noticed in particular clients.[30]

Thus research was beginning to realize the need for identifying how obese individuals were deviating in their eating habits from the norm. This knowledge might answer the question of which behavior modification techniques would be most effective.

Identifying Eating Habit Differences

In a study having direct implications to the present study, Drabman, Hammer and Jarvie observed the number of bites, chews, sips, talks and chews per bite of one-hundred-twenty obese and nonobese elementary school children in their school cafeterias. The results revealed:

> . . . Obese subjects took significantly more bites, significantly fewer chews and significantly fewer chews per bite in thirty second intervals. Males took significantly more bites and chewed more often than females. These data represent the beginnings of a micro-analysis of the problems of childhood obesity.[31]

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[30]Thomas J. Coates, "The Efficacy of a Multicomponent Self-Control Program in Modifying the Eating Habits and Weight of Three Obese Adolescents," Dissertation Abstracts International, 38, September, 1977, pp. 1295-1296.

[31]Ronald S. Drabman, David Hammer and Gregory J. Jarvie, "Eating Styles of Obese and Nonobese Black and White Children in a Naturalistic Setting," Addictive Behaviors, 1977, p. 83-86.

Thus, from a single research study, significant differences were observed between obese and normal children, and even between obese males and females.[32] That research began to focus on the "problems of childhood obesity", a problem that usually followed the child into adulthood.

Research was beginning to discover the importance of recognizing that many differing factors were involved in the general area of eating disturbances. Since researchers had revealed that obesity was related to inappropriately learned behaviors, further research needed to determine exactly which behaviors an obese person should unlearn. To restate Coates, perhaps it would be easier and more effective for each individual to concentrate only on those areas in which "specific deviant behavior patterns" were observed.[33]

Earlier studies supported the possibility that there were basic differences in the eating habits of obese people compared to normal weight people. Research then identified the area of eating habits as a specific problem of obesity. The most recent researches have begun to concentrate on the many factors involved in this general term of eating habits.

If significant differences existed between the eating habits of obese people compared to normal people, it would, of course, be an additional explanation of why behavior modification techniques were effective for weight reduction programs. Further, it would begin to explain why certain behavior modification techniques were effective for

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[32]Ibid.

[33]Coates, op. cit., pp. 1295-1296.

some individuals and totally ineffective for others. It would begin to identify those behaviors that should be emphasized in successful weight reduction programs for each individual.

## Food Preferences

Previous research revealed that the obese person tended to be more sensitive to external, environmental cues. The eating behavior of the nonobese person was determined by his own internal state whereas the obese person was more likely to eat simply when food was present.[34]

A survey was given forty-eight female dieters and thirty college students in nutrition. The Dieter's Group was further subdivided into either Successful or Unsuccessful at Dieting. The Dash-Brown Survey of Fact and Fiction in Weight Reduction was used. Nutrition students and Successful Dieters had higher total scores than the Unsuccessful Dieters. These results supported the idea that a difference existed between the obese and nonobese person in knowledge of dieting and nutrition.[35] For the present study, it suggested that a lack of knowledge in these areas would have an additive effect on a person who already had diet problems.

In a further study, Schachter recorded the number of obese and normal weight subjects who ate shelled versus unshelled almonds. Of the normal subjects, about half ate the nuts, shelled or unshelled.

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[34]Arkes, op. cit., pp. 24-27.

[35]Richard A. Brown and Jerry D. Dash, "Nutrition Students versus Dieters on a Readiness-to-Diet Scale," Psychological Reports, 41, December, 1977, p. 1242.

However, out of twenty obese subjects, nineteen ate when offered shelled almonds but only one ate when offered nuts that required shelling.[36]

Stuart emphasized environmental controls in the treatment of obesity. For a weight loss program, he stressed cue elimination, such as eating in only one place; cue suppression, such as fixing only small amounts for each meal; and cue strengthening, such as keeping records of how many pounds have been lost. Preliminary results have been very promising.[37]

Pliner tested the regulation of obese and normal weight humans after consuming a Liquid or Solid Preload of 200 or 600 calories. Forty-eight obese and forty-eight normal undergraduates were the subjects. Normal subjects ate in accordance with the caloric Preload on both Liquid and Solid diets. Obese subjects regulated their eating on the Liquid Preload but not on the Solid Diet.[38]

Epstein and others, in addition to their analysis of modification of eating patterns of obese children by regulation of bite rate, analyzed food preferences of these subjects. Bite rate and amount of food completed were analyzed for six food categories. A difference was reported for breadstuffs and milk.[39]

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[36]Arkes, op. cit., pp. 24-27.

[37]R. B. Stuart, "A Three-Dimensional Program for the Treatment of Obesity," Behavior Research Therapy, 8, 1971, pp. 177-186, cited by James C. Coleman, p. 513.

[38]Patricia L. Pliner, "Effect of Liquid and Solid Preloads on Eating Behavior of Obese and Normal Persons," Physiology and Behavior, 11, September, 1973, pp. 285-290.

[39]Epstein, op. cit., pp. 407-415.

Thus research began to explore the differences between the obese and nonobese person in food preferences. Studies revealed differences in nutrition knowledge and on the kinds of food preferred by the obese. This has suggested that there might be a basic difference in the kinds of food purchased by the obese person, and thus available to him, as compared to a normal weight person. Differences in amount of effort expended to obtain food implied that there might be basic differences in the way the obese person prepared food as compared to the normal weight person. If significant differences existed in the areas of food purchasing and food preparation, and previous studies suggested differences in both of them, this knowledge would greatly enhance the effectiveness of weight reduction programs.

Thus research began to explore the differences between the obese and nonobese person in food preferences. Studies revealed differences in nutrition knowledge and on the kinds of food preferred by the obese. This has suggested that there might be a basic difference in the kinds of food purchased by the obese person, and thus available to him, as compared to a normal weight person. Differences in amount of effort expended to obtain food implied that there might be basic differences in the way the obese person prepared food as compared to the normal weight person. If significant differences existed in the areas of food purchasing and food preparation, and previous studies suggested differences in both of them, this knowledge would greatly enhance the effectiveness of weight reduction programs.

## Chapter 3

## METHODS AND PROCEDURES

In Chapter 3, the methods and procedures for securing the sample are discussed as well as the materials used in collecting and analyzing the data. Additional elements, such as the design of the study, data collection, and data analysis, are also discussed.

### Population and Sampling

The nature of this study dictated the need for an 'ex post facto' procedure for selecting the sample population and sample. That is, the subjects were assigned to their groups according to the pre-existing condition of weight, whether they had been successful at losing weight, were presently overweight, or were normal weight. The successful weight loss population and the obese population were further subdivided into one of six groups according to the weight they had lost or needed to lose: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and more. These two groups were selected from the Conway Diet Institute.

The first sample population, successful weight loss, was selected from Conway Diet Centers in Ohio, Indiana and Pennsylvania since Conway classes in these areas were the first to be established and had been in existence from five to ten years. Lecturers from these areas were instructed to send weight loss records of anyone in their

classes who had successfully finished the Conway program and had reached their goal weight. Letters were sent to these individuals asking them to participate in the study.

The obese sample was also selected from Ohio, Indiana and Pennsylvania. Lecturers were instructed to randomly select a specified number of new class members within the various weight loss groups.

The normal weight sample population were chosen by a random sample technique. Two hundred fifty adults were selected from a medium sized college area in Kansas.

## Materials and Instrumentation

A sixty-four-item questionnaire was designed for this study. The items were separable into the three areas of food purchasing, food preparation and eating habits. (See Appendix F, p. 117.)

Subjects chose their answers from a Likert-type scale with four available choices. The choices were: always, frequently, sometimes or never. A personal data sheet and instructions preceded the questionnaire. Subjects' responses were weighted from +1 to +4.

## Design of the Study

This study was designed to investigate the food purchasing, food preparation and eating habits of successful, obese and normal weight subjects by means of a written questionnaire. Sample one consisted of two hundred two women who had successfully lost weight in the Conway diet program. Sample two consisted of two hundred forty overweight women who were presently enrolled in the Conway diet program. Sample three consisted of two hundred fifty normal weight subjects.

The dependent variable was the responses successful, obese and normal weight subjects had given. The three levels of the dependent variable were eating habits, food purchasing and food preparation.

The independent variable was weight group. The two levels of the independent variable were the successful and obese groups, both groups being divided into six subgroups according to the total weight they had lost or needed to lose: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and seventy-five pounds and over. A third level, the noraml weight groups, was designated the control group.

## Data Collection

This sixty-four-item questionnaire concerning eating habits, food preparation and food purchasing was issued to subjects living in the United States who were randomly selected from Ohio, Indiana, Pennsylvania and Kansas. A cover sheet requesting personal statistics accompanied each questionnaire. Instructions were at the beginning of each test.

In order to collect data from the first sample, the successful group, lecturers were asked to mail the weekly weight loss records of individuals in their classes who had successfully reached their goal weight. Weight losses were calculated and subjects were placed in one of six categories according to the total amount of weight each had lost. These categories were: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

Inquiry letters were written to these subjects with an explanation of the study and a request to participate in it. The questionnaire was then sent to those people who responded to the inquiry. Pre-addressed and stamped envelopes were provided for the subjects.

In order to collect data from the second sample, the obese group, twenty-five Conway lecturers were asked to tally the number of new members they had and the amount of weight each had to lose. From this tally, the second sample was randomly selected. Lecturers were instructed to distribute before or after their regular Conway class a specified number of questionnaires to class members within the various weight loss groups.

Data for the control sample, the normal weight group, were collected by personal contact. Subjects were randomly selected from a medium sized college area in Kansas.

## Data Analysis

A one-way between subjects analysis of variance was used to analyze the data for this study. The independent variable was weight group which had two levels, successful and obese. A third level was designated the control variable; this was the normal weight group. The successful and obese weight groups were subdivided into the following weight groups: eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and seventy-five pounds and over, depending on the total amount of weight they either had lost or needed to lose. The dependent variable was the responses to a sixty-four-item questionnaire

divided into the three levels of eating habits, food preparation and food purchasing.

The analysis of variance tests whether two or more groups have been drawn from the same population of scores or not. An estimate of the variance in population is made by averaging the variance within each condition. This estimate is called the mean square error. A second estimate is calculated from individual scores within categories. These two estimates yield a ratio, the F ratio. If there are no significant differences between populations, the F ratio would approximate 1. As the F ratio increases, there is the implication that differences do exist between the variance estimated from individual scores within the groups, and the null hypothesis can be rejected.[40]

In addition to the analysis of variance, a specific comparison test, the Scheffe test, was calculated to determine significant differences between the means within the independent variable levels of weight. Also, a T-value was calculated for each item determining differences between group responses.

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[40]Marigold Linton and Philip S. Gallo, Jr., The Practical Statistician (Monterey: Brooks/Cole Publishing Company, 1975), pp. 123-125.

## Chapter 4

## ANALYSIS OF DATA

This study was designed to investigate the possible differences in the eating, food preparation and food purchasing habits of subjects in various categories: those who had successfully lost weight through a weight reduction program; those who were presently in a weight reduction program and needed to lose weight; and those who were in a normal weight range. The study was also designed to investigate possible differences within various subgroups, each subgroup being based on the total amount of weight the subject either had lost or needed to lose.

A self-administered questionnaire was designed to determine any significant differences between the groups. The data from the questionnaires were used to examine the null hypothesis which stated that there were no significant differences in the eating, food preparation and food purchasing habits between the various weight levels. Analysis of variance was used to determine any differences; the Scheffe test and the T test were used to further analyze the data. Results of the statistical analyses and a summary are presented in this chapter.

### Analysis of Variance

The procedure for computing the statistical analysis of variance for the groups in this study was discussed in Chapter 3, pp. 30-31. Table 4 (Appendix C, p. 72) presents the comparison of weight groups

for those items relating to eating habits. An F-value of 0.93 was obtained when comparing the means of the groups. This obtained F-value was less than the tabled F(2, 495) value of 3.00 at the .05 level of confidence (all tabled values were obtained from Linton and Gallo).[41] The following hypothesis was retained: there is no significant difference in the eating habits (as measured by a written questionnaire) of subjects who have successfully lost weight, of subjects who are presently overweight and of subjects who are in the normal weight range.

Table 5 (Appendix C, p. 73) presents the comparison of weight groups for those items relating to food preparation. The obtained F-value of 6.72 exceeded the tabled F(2, 495) value of 3.00 at the .05 level of confidence and also exceeded the tabled F(2, 495) value of 4.61 at the .01 level of confidence. The following hypothesis was rejected: there is no significant difference in the food preparation habits of subjects who have successfully lost weight, of subjects who are presently overweight and of subjects in the normal weight.

Table 6 (Appendix C, p. 74) presents the comparison of weight groups for those items relating to food purchasing. The obtained F-value of 6.09 exceeded the tabled F(2, 495) value of 3.00 at the .05 level of confidence and also exceeded the tabled F(2, 495) value of 4.61 at the .01 level of confidence. The following hypothesis was rejected: there is no significant difference in the food purchasing habits of subjects who have successfully lost weight, of subjects who are presently overweight and of subjects who are in the normal weight range.

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[41]Linton, op. cit., pp. 368-370.

Table 7 (Appendix D, p. 76) presents the comparison of eating habits within the successful weight loss groups. The obtained F-value of 0.48 was less than the tabled F(5, 164) value of 2.21 at the .05 level of confidence. The following hypothesis was retained: there is no significant difference in the eating habits of subjects who have lost eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

Table 8 (Appendix D, p. 77) presents the comparison of the successful weight loss groups for those items relating to food preparation. The obtained F-value of 0.66 was less than the tabled F(5, 164) value of 2.21 at the .05 level of confidence. The following hypothesis was retained: there is no significant difference in the food preparation habits of subjects who have successfully lost eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

Table 9 (Appendix D, p. 78) presents the comparison of the successful weight loss groups for those items relating to food purchasing. The obtained F-value of .06 was less than the tabled F(5, 164) value of 2.21 at the .05 level of confidence. This hypothesis was retained: there is no significant difference in food purchasing of subjects who have successfully lost eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and seventy-five pounds and over.

Table 10 (Appendix D, p. 79) presents the comparison of the obese weight groups for those items relating to eating habits. The

obtained F-value of 1.46 was less than the tabled F(5, 167) value of 2.21 at the .05 level of confidence. This hypothesis was retained: there is no significant difference in eating habits of subjects who are presently overweight eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

Table 11 (Appendix D, p. 80) presents the comparison of the obese weight groups for those items relating to food preparation. The obtained F-value of 1.36 was less than the tabled F(5, 167) value of 2.21 at the .05 level of confidence. The following hypothesis was retained: there is no significant difference in the food preparation habits of subjects who are presently overweight eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

Table 12 (Appendix D, p. 81) presents the comparison of the obese weight groups for those items relating to food purchasing. The obtained F-value of 1.36 was less than the tabled F(5, 167) value of 2.21 at the .05 level of confidence. The following hypothesis was retained: there is no significant difference in the food purchasing habits of subjects who are presently overweight eleven to twenty pounds, twenty-one to thirty pounds, thirty-one to forty pounds, forty-one to fifty pounds, fifty-one to seventy-four pounds, and finally, seventy-five pounds and over.

## Scheffe Test

The analysis of variance, which yields the F ratio, tests any overall differences among the groups studied. It does not, however, test the differences between specific groups.[42] The Scheffe test, a specific comparison test, was calculated to determine where the significant differences, if any, were. The significance level for the Scheffe test requires that the tabled F value be multiplied by (k-1) where k is the number of groups.[43]

Tables 4-6 (Appendix C, pp. 72-74) present the comparison of successful weight loss, obese and normal weight groups for those items relating to eating habits, food preparation and food purchasing. The significant level for the Scheffe test is determined by multiplying the tabled F value, 3.00 at the .05 level of confidence, by (k-1) or, in this case (3-1). Therefore, the Scheffe value equals 6.00 at the .05 level of confidence.

For Tables 4 and 5, the obtained values did not exceed Scheffe's value at the .05 level of confidence. However, Table 6, which compares successful weight loss, obese and normal weight groups for those items relating to food purchasing, revealed a significant difference between the successful weight loss and the obese groups.

Tables 7-9 (Appendix D, pp. 76-78) present the comparison within the successful weight loss groups for those items relating to eating habits, food preparation and food purchasing. The .05 level of

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[42]Linton, op. cit., pp. 313-314.

[43]I. M. Chakravarti, R. G. Laha, and J. Roy, Handbook of Methods of Applied Statistics, Volume 1, (New York: John Wiley and Sons, Inc., 1967), p. 362.

confidence of F(5, 164) was found to be 2.21. Multiplying this value by (k-1) or 5 gives a value of 11.05. None of the obtained values exceeded this value.

Tables 10-12 (Appendix D, pp. 79-81) present the comparison within obese groups for those items relating to eating habits, food preparation and food purchasing. The .05 level of confidence of F(5, 167) was found to be 2.21. Multiplying this value by (k-1) or 5 gives a value of 11.05. None of the obtained values exceeded this value.

## T Test

Comparison was next made between pairs of groups' responses by use of the T test to test the mean differences. The value of *t* necessary for significance at the .05 level of confidence is 1.96; the value of *t* necessary for significance at the .01 level of confidence is 2.58.

Significant difference between the obese and normal groups are listed in Table 1 on page 38 which summarizes Table 13 (Appendix E, pp. 83-93). The questionnaire items are presented in Appendix B (pp. 62-70). The classification of items by variable are presented in Appendix F (p. 117).

Responses to fourteen items, 21.9% of the sixty-four items in the questionnaire, were significant at the .01 level of confidence. Responses to ten items, 15.6% of the sixty-four items, were significantly different at the .05 level of confidence. Response options were "always", "frequently", "sometimes" and "never", with weighted values of 1, 2, 3 and 4, respectively.

Item number one, for example, read "I ___ eat three meals a day". The mean response of the obese group was 1.79 which placed it

Table 1

Analysis of Obese and Normal Weight Groups by Dependent Variable; Significant Difference Items Only

| Dependent Variable | Item | Mean | | T Value | Significance | |
|---|---|---|---|---|---|---|
| | | Obese | Normal | | .05 | .01 |
| Eating Habits: | 001 | 1.79 | 2.53 | 5.52 | | * |
| | 003 | 3.12 | 2.61 | 4.46 | | * |
| | 004 | 3.33 | 2.96 | 3.52 | | * |
| | 005 | 3.33 | 2.76 | 4.86 | | * |
| | 006 | 2.87 | 3.11 | 2.07 | * | |
| | 008 | 1.72 | 2.10 | 3.41 | | * |
| Food Preparation: | 011 | 2.60 | 2.84 | 2.12 | * | |
| | 017 | 3.27 | 2.95 | 2.90 | | * |
| | 026 | 1.45 | 1.67 | 2.11 | * | |
| | 027 | 2.40 | 1.85 | 3.86 | | * |
| | 029 | 3.00 | 3.40 | 3.79 | | * |
| Food Purchasing: | 021 | 3.06 | 2.70 | 2.09 | * | |
| | 030 | 2.11 | 2.52 | 3.40 | | * |
| | 033 | 2.50 | 2.28 | 1.99 | * | |
| | 038 | 1.63 | 1.92 | 2.69 | | * |
| | 044 | 3.50 | 3.69 | 2.30 | * | |
| | 045 | 2.33 | 2.09 | 2.06 | * | |
| | 046 | 3.56 | 3.38 | 2.17 | * | |
| | 047 | 1.36 | 1.69 | 3.44 | | * |
| | 048 | 2.20 | 2.47 | 2.34 | * | |
| | 049 | 2.30 | 2.80 | 4.52 | | * |
| | 050 | 1.55 | 1.79 | 2.07 | * | |
| | 052 | 1.45 | 2.04 | 5.78 | | * |
| | 058 | 1.53 | 1.91 | 3.32 | | * |

between the "always" and "frequently" options. The mean response of the normal group was 2.53 which placed it between the "frequently" and "sometimes" options.

Item number twenty-seven referenced methods of cooking meat; item twenty-seven was "Frying". The mean response of the obese group, 2.40, placed that response between the "frequently" and "sometimes" options. The mean response of the normal group, 1.85, placed it between the "always" and "frequently" options.

Item number twenty-one read "I ___ buy whole milk rather than skimmed or low fat milk". The obese group mean response, 3.06, was between "sometimes" and "never" while the normal group, 2.70, was between "frequently" and "sometimes".

Item fifty-two referred to "Canned Meat" when doing the regular food purchasing. Mean response of the obese group, 1.45, was between "always" and "frequently" while the normal group, 2.04, was between "frequently-sometimes".

Significant differences between the successful and obese groups are listed in Table 2 on page 40. This summarizes Table 14 (Appendix E, pp.94-104).

Responses to fifteen items, 23.4% of the sixty-four items in the questionnaire, were significant at the .01 level of confidence. Responses to twelve items, 18.8% of the sixty-four items, were significantly different at the .05 level of confidence.

Briefly examining several of the items, item number five, for example, read "I ___ take at least 30 minutes for each meal". The mean response of the successful group was 2.95, which placed it between

Table 2

Analysis of Successful and Obese Weight Groups by Dependent Variable; Significant Difference Items

| Dependent Variable | Item | Mean | | T Value | Significance | |
|---|---|---|---|---|---|---|
| | | Successful | Obese | | .05 | .01 |
| Eating Habits: | 001 | 1.47 | 1.79 | 2.90 | | * |
| | 003 | 3.40 | 3.12 | 3.03 | | * |
| | 004 | 3.51 | 3.33 | 2.17 | * | |
| | 005 | 2.95 | 3.33 | 3.55 | | * |
| | 006 | 3.25 | 2.87 | 3.62 | | * |
| Food Preparation: | 010 | 3.05 | 2.71 | 3.67 | | * |
| | 012 | 1.82 | 2.34 | 3.87 | | * |
| | 013 | 2.26 | 2.69 | 3.58 | | * |
| | 014 | 2.33 | 2.66 | 2.61 | | * |
| | 024 | 3.34 | 3.63 | 2.89 | | * |
| | 027 | 2.68 | 2.40 | 2.01 | * | |
| Food Purchasing: | 016 | 2.69 | 2.38 | 2.28 | * | |
| | 021 | 3.60 | 3.06 | 3.90 | | * |
| | 025 | 3.34 | 3.08 | 2.62 | | * |
| | 033 | 2.84 | 2.50 | 3.36 | | * |
| | 034 | 2.89 | 2.00 | 2.60 | | * |
| | 036 | 2.13 | 1.81 | 2.35 | * | |
| | 040 | 3.08 | 2.88 | 2.26 | * | |
| | 041 | 3.04 | 2.76 | 2.90 | | * |
| | 043 | 3.22 | 3.00 | 2.48 | * | |
| | 044 | 3.66 | 3.50 | 2.04 | * | |
| | 051 | 3.04 | 2.65 | 3.71 | | * |
| | 054 | 3.25 | 3.04 | 2.43 | * | |
| | 057 | 3.68 | 3.53 | 2.08 | * | |
| | 059 | 1.73 | 1.53 | 2.08 | * | |
| | 061 | 3.27 | 3.08 | 2.55 | * | |
| | 062 | 2.61 | 2.37 | 2.11 | * | |

"frequently" and "sometimes". The mean response of the obese group was 3.33, which placed it between "sometimes" and "never".

Item twelve read "I ___ prepare a shopping list before I go to the grocery store". The mean response of the successful group, 1.82, was between "always" and "frequently". The mean response of the obese group, 2.34, placed it between "frequently" and "sometimes".

Item sixteen read "I ___ buy white bread rather than wheat or rye". Mean response of the successful group was 2.84. Mean response of the obese group was 2.50. Both groups' responses were between "frequently" and "sometimes", but the successful groups' responses were nearer the "frequently" option.

Item fifty-one referred to "Pork" when doing the regular food purchasing. Mean response of the successful group, 3.04, was between "sometimes" and "never". Mean response of the obese group, 2.65, was between "frequently" and "sometimes".

Significant differences between the successful and normal groups are listed in Table 3 on page 42. This summarizes Table 15 (Appendix E, pp. 105-115).

Responses to twenty-seven items, 42.2% of the sixty-four items in the questionnaire, were significant at the .01 level of confidence. Responses to six items, 9.4% of the sixty-four items, were significantly different at the .05 level of confidence. A brief analysis of the items follows.

Item number one, for example, read "I ___ eat three meals a day". The mean response of the successful group, 1.47, was between "always" and "frequently". The mean response of the normal group, 2.53, was between "frequently" and "sometimes".

Table 3

Analysis of Successful and Normal Weight Groups by Dependent Variable; Significant Difference Items Only

| Dependent Variable | Item | Mean | | T Value | Significance | |
|---|---|---|---|---|---|---|
| | | Successful | Normal | | .05 | .01 |
| Eating Habits: | 001 | 1.47 | 2.53 | 8.66 | | * |
| | 003 | 3.40 | 2.61 | 7.53 | | * |
| | 004 | 3.51 | 2.96 | 5.32 | | * |
| | 008 | 1.69 | 2.10 | 3.95 | | * |
| Food Preparation: | 010 | 3.05 | 2.69 | 4.13 | | * |
| | 012 | 1.82 | 2.24 | 3.24 | | * |
| | 013 | 2.26 | 2.58 | 2.70 | | * |
| | 014 | 2.33 | 2.82 | 3.80 | | * |
| | 017 | 3.31 | 2.95 | 3.40 | | * |
| | 024 | 3.34 | 3.57 | 2.12 | * | |
| | 026 | 1.45 | 1.67 | 2.05 | * | |
| | 027 | 2.68 | 1.85 | 6.07 | | * |
| | 029 | 2.94 | 3.40 | 4.57 | | * |
| Food Purchasing: | 019 | 2.40 | 1.97 | 3.12 | | * |
| | 021 | 3.60 | 2.70 | 5.92 | | * |
| | 025 | 3.34 | 2.99 | 3.22 | | * |
| | 031 | 3.57 | 3.27 | 3.04 | | * |
| | 033 | 2.84 | 2.28 | 5.53 | | * |
| | 034 | 2.89 | 2.61 | 2.76 | | * |
| | 036 | 2.13 | 1.80 | 2.42 | * | |
| | 038 | 1.68 | 1.92 | 2.26 | * | |
| | 041 | 3.04 | 2.79 | 2.60 | | * |
| | 043 | 3.22 | 2.98 | 2.54 | * | |
| | 045 | 2.45 | 2.09 | 3.10 | | * |
| | 046 | 3.67 | 3.38 | 3.86 | | * |
| | 047 | 1.28 | 1.69 | 4.46 | | * |
| | 049 | 2.18 | 2.80 | 5.87 | | * |
| | 051 | 3.04 | 2.58 | 4.57 | | * |
| | 052 | 1.37 | 2.04 | 7.09 | | * |
| | 054 | 3.25 | 3.00 | 3.10 | | * |
| | 058 | 1.44 | 1.91 | 4.28 | | * |
| | 062 | 2.61 | 2.16 | 4.14 | | * |
| | 063 | 3.07 | 2.88 | 2.24 | * | |

Item number twenty-seven referred to methods of cooking, twenty-seven being "Frying". The mean response of the successful group, 2.68, was between "frequently" and "sometimes". The mean response of the normal group, 1.85, was between "always" and "frequently".

Item number fifty-one referred to "Pork" when doing the regular food purchasing. The mean response of the successful group, 3.04, was between "sometimes" and "never". The mean response of the normal group, 2.58, was between "frequently" and "sometimes".

Item fifty-two referred to "Chicken" when doing the regular food purchasing. The mean response of the successful group, 1.37, was between "always" and "frequently". The mean response of the normal, 2.04, was between "frequently" and "sometimes".

## Summary

Chapter 4 discussed the results of the statistical analyses of the data. A one-way analysis of variance was computed to determine significant differences in the data. The Scheffe test and the T test were computed to identify significant differences between any of the groups. The purpose of this study was to determine if any significant differences existed between successful, obese and normal weight subjects in eating habits, food preparation and food purchasing habits.

Statistical significance was found, as determined by the analysis of variance for Table 5, Appendix C, p. 73 which presents the comparison of weight groups for those items relating to food preparation. A significant difference was also found in the comparison of weight groups for those items relating to food purchasing, Table 6, Appendix C, p. 74.

No statistically significant difference was found, determined by the analysis of variance, in the comparison of weight groups for those items relating to eating habits. Additionally, there was no significance found within the successful weight loss groups or the obese weight group when comparing the six subgroups of each for eating habits, food preparation or food purchasing differences.

As determined by the Scheffe test, there was a statistically significant difference between the responses of the successful and obese groups for those items relating to food purchasing. There were no statistically significant differences between the responses of the successful, obese and normal weight groups for those items relating to eating habits or food purchasing. There were also no significant differences within the six subdivisions of either the successful or obese groups.

As determined by the T test, there were statistically significant differences in the responses to 21.9% of the items at the .01 level of confidence when comparing the obese and normal groups. When comparing the successful and obese groups, there were statistically significant differences in the responses to 23.4% of the items. When comparing successful and normal groups, there were statistically significant differences in the responses to 42.2% of the items.

# Chapter 5

## SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A summary of the present study is discussed in this chapter. The results and findings are examined along with suggestions for further research.

### Summary

In this study the eating habits, food preparation and food purchasing habits of subjects who are obese and subjects who have successfully lost weight were examined. Subjects were current or former members of Conway diet centers and were compared to subjects in the normal weight range. A total of four hundred ninety-seven subjects participated in this study.

A sixty-four-item, self-administered questionnaire was designed to measure the responses of the subjects in each weight group. A one-way between subjects analysis of variance was computed to test the null hypothesis. The Scheffe test was calculated to determine significant differences between the means within the independent variable levels of weight. Also, the T test was calculated for each item determining differences between group responses.

A significant difference was found, as determined by the analysis of variance, at the .05 and .01 levels of confidence, when comparing responses to items relating to food preparation between the successful, obese and normal weight groups. A significant difference

at the .05 and .01 levels of confidence was also found when comparing responses of the successful, obese and normal weight groups to food purchasing. No significant differences were found in the comparison of successful, obese and normal groups to those items relating to eating habits.

No significant differences were found, as determined by the analysis of variance, within the successful weight loss group when comparing the six subgroups for eating habits, food preparation and food purchasing. There were also no significant differences found within the six subdivisions of the obese groups for eating habits, food preparation and food purchasing.

As determined by the Scheffe test, there was a statistically significant difference between the responses of the successful and obese groups for those items relating to food purchasing. Since the analysis of variance computed a statistically significant difference for this same comparison, the Scheffe test findings located the successful and obese groups responses to the same questions as being more significantly different from each other than either differed from the normal group. No other comparisons were considered significant.

However, since there was a significant difference, as determined by the analysis of variance, between the successful, obese and normal groups for those items relating to food preparation, the results of the Scheffe test should be examined more closely. The Scheffe formula requires that the obtained value must equal or exceed 6.00 (Chapter 4, p. 36) to be significant at the .05 level of confidence. The obtained value when comparing successful and obese subjects' responses to those items relating to food preparation was 5.79. The obtained value when

comparing obese and normal subjects' responses to those items relating to food preparation was 4.03. Both these figures are comparatively larger than the obtained value of 0.12 when comparing successful and normal subjects' responses.

As determined by the T test, there were statistically significant differences in the responses to 21.9 percent of the items when comparing the obese and normal groups. When comparing the successful and obese groups, there were statistically significant differences in the responses to 23.4 percent of the items. When comparing successful and normal groups, there were statistically significant differences in the responses to 42.2 percent of the items.

## Conclusions

Analysis of variance determined that successful, obese and normal subjects' responses to the items relating to food purchasing were significantly different. The differences, as determined by the Scheffe test, were greatest when comparing the successful and obese groups.

The analysis of variance test also determined that successful, obese and normal weight subjects' responses to the items relating to food preparation were significantly different. The greatest difference occurred between the successful and obese groups; however, the difference was not significant at the .05 level of confidence.

Paired comparison of the groups for each item, as determined by the T test, revealed significant differences for 21.9 percent of the items when comparing obese and normal subjects at the .01 level of confidence. Additionally, 15.6 percent were significantly different at the .05 level of confidence. When comparing successful and obese subjects,

23.4 percent of the responses were calculated to be significantly different at the .01 level of confidence. Additionally, 18.8 percent of the responses were significantly different at the .05 level of confidence. When comparing successful and normal subjects, 42.2 percent of the responses were calculated to be significantly different at the .01 level of confidence. Additionally, 9.4 percent of the responses were significantly different at the .05 level of confidence.

## Recommendations

Significant differences were determined in this study for the food preparation and food purchasing habits of successful, obese and normal weight subjects. More specifically, the differences were identified as being greater between the successful and obese groups. Item by item examination of Tables 1-3 (pp. 38-42) identify significantly different responses with the implication that these are possible problem areas for the obese. For example, successful dieters more often prepare a shopping list before going to the grocery store. They also buy less pork. Additionally, they more often take at least 30 minutes for each meal.

The last item above, namely time taken to eat, was an item in the Eating Habits variable. The responses to the Eating Habits variable, as determined by the analysis of variance, were not significantly different. However, previous studies, presented in Chapter 2, identified eating habits as a probable problem area for the obese. These researches were all on observed behavior while the present research was a self-administered questionnaire. This suggests the possibility that the obese person might simply be unaware of his eating habits.

If one wished to repeat this experiment, subjects could be chosen from different diet institutions. Other variables such as age, sex and level of education might be used. The questionnaire could be altered to include additional or different food purchasing lists. More questions could also be added concerning food preparation and eating habits. Each of these suggestions might further the understanding of obesity and its treatment.

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# APPENDICES

# APPENDIX A

# WRITE-UP OF THE PROCEDURES FOLLOWED TO OBTAIN DATA FOR OBESE AND SUCCESSFUL GROUPS

2301 Woodstock Road
Columbus, Ohio 43221
May 27, 1980

Dr. Amburn,

losed is the write-up of the procedures I followed to obtain the com-
ted questionnaires I have sent to you via U.P.S..

you have any questions concerning the study, please call me before
0 P.M. on Tuesday, June 3. After that time, you can reach me by
iting to 5 Castlehill Road, Ayr, Scotland, KA7 2HX (zip code), where
ill be joining my husband who is presently on sabbatical from Ohio
te. I will be returning to Columbus on December 3. My phone number
Scotland is country code 44, city code 292 and local number 62425.

Conway has closely followed my work at this end and should be able to
wer any questions you might have.

ave enjoyed working with you and hope that the data will prove fruitful
both you and the Conway Diet Institute.

best to both you and Nell!

cerely,

abelle

## Data Collection Procedure in Columbus

uring my meeting with Dr. Amburn in Kansas in August of 1979, the plan for the research study was formulated. It was decided that a onnaire covering four basic areas, food habits, behavioral modi- ion, physical activity, and psychological profile, be administered to tinct. groups, individuals who had successfully lost weight on the program and were presently at their goal weight, individuals who just beginning the Conway program, and individuals who had never had ght problem who would serve as a control group.

I was assigned the task of identifying individuals for the first two s mentioned above while Dr. Amburn and his students were to identify hird group. In each of my two groups, I was to locate 30 individuals ad lost or needed to lose 10-19 lbs., 20-29 lbs., 30-39 lbs.,40-49 lbs., lbs., 75-100 lbs., and 100 lbs. or more. To simplify my work, I ned the following codes to the groups mentioned above

10-19 lbs. --- I
20-29 lbs. --- II
30-39 lbs. --- III
40-49 lbs. --- IV
50-74 lbs. --- V
75-100 lbs. -- VI
100 or more -- VII

Since Conway classes in Ohio, Indiana, and Pennsylvania were the first e established in the company and had been in existance from 5 to 10 rs, I selected experienced lecturers in these areas to aid me in my rch for individuals who had successfully lost weight on the Conway ram. I contacted 28 lecturers and instructed them to mail to me the ly weight loss records of anyone in their classes who had successfully shed the Conway program and had reached their goal weight (a weight ulated from their height and frame size using a standard insurance ary chart for weight).

Once these record cards were forwarded to me, I zeroxed them and cal- ted for each card the total amount of weight each individual had lost and amount of time it had taken for their total weight loss to occur. The s were then grouped according to weight losses and were coded from VII depending on the amount of weight lost. Since there were still a tively small number of individuals identified who had lost 50 lbs. or , I contacted additional lecturers and asked them to send me their rds for individuals who had lost in excess of 50 pounds to reach their weights.

After processing these additonal cards, I realized that the number of viduals in groups VI and VII were not sufficient to supply 30 subjects group. I contacted Dr. Amburn and explained my problem. We agreed that last two groups could be combined and from that point on group VI isted of individuals who had lost 75 pounds or more.

ollection

A letter explaining the research project was sent to the individuals ified by my search. They were asked to participate in the study and were ed of anonymity. If they agreed to complete a questionnaire, they were to fill out a postcard and return it to me. Listed below are the r of letters sent and the number of positive responses for each group.

| Letters Sent | Positive Responses | % of Positive Responses |
|---|---|---|
| 104 | 45 | 43% |
| 100 | 31 | 31% |
| 81 | 25 | 31% |
| 86 | 36 | 42% |
| 74 | 39 | 53% |
| 47 | 26 | 55% |

Since some of the individuals whose weight loss records were forwarded e had lost their excess weight as long as five years ago, we felt that number of positive responses we received reflected the fact that some ivuals had moved and could not be contacted, some individuals had ained some or all of their excess weight (we specified in our letter that y be within 10% of their correct weight), and some individuals simply e not interested in participating in the research project. It was eresting to me that those individuals who had lost the greatest amounts weight were the most willing to participate in the study.

Once I received the questionnaires from Kansas, a cover letter explain- how to complete the questionnaire, the questionnaire, and a pre-addressed mped envelope were sent to each individual who had agreed to participate the study. Three weeks after this initial mailing with approximately 70% the questionnaires returned, I sent a postcard to those who had not yet ponded asking them to complete their questionnaires as soon as possible. return envelopes for all questionnaires had been coded with the appro- ate Roman numeral signifying the amount of weight each individual had to reach their goal weight. This code was copied onto each questionnaire it was received.

Listed below are the data on the number ofquestionnaires sent and eived.

| up | No. Questionnaires Sent | No. Received | % Received |
|---|---|---|---|
| I | 45 | 32 | 71% |
| I | 31 | 28 | 90% |
| I | 25 | 22 | 88% |
| V | 36 | 34 | 94% |
| V | 39 | 32 | 82% |
| I | 26 | 24 | 92% |

After receiving the questionnaires from Kansas, I also contacted roximately 15 Conway lecturers with classes in Ohio and Indiana and asked

a to review their class enrollments and tally for me the number of new bers they had and the total amount of weight each new member had to e to reach their correct weight. I then mailed to these lecturers an tructions sheet which asked them to distribute before or after their reg- r Conway class a specified number of questionnaires to class members hin various weight loss groups, e.g., 3 in group I, 4 in group V, and n group VI. I mailed out 40 questionnaires per group I - VI. When the turers began returning the completed questionnaires to me, I realized t some of them had not been able to provide the number of questionnaires ad requested in each group (some members who had initially been identi- d had not returned to class the following week, some members did not t to take the time to complete the questionnaire, and some members did want to provide personal data even though they were assured of anony- y). I then mailed out questionnaires to another 10 lecturers in Ohio Indiana.

The number of questionnaires returned to me in each of the six weight s groups is listed below.

| Group | No. of Questionnaires Returned |
|---|---|
| I | 30 |
| II | 31 |
| III | 34 |
| IV | 18 |
| V | 30 |
| VI | 39 |

In order to differentiate the questionnaires in this second group (those were just beginning to diet) from those in the first group (those who successfully dieted and were at their goal weight), the questionnaires the second group were coded by the lectureres with the amount of weight n individual had to lose (as determined by the height-weight chart) and e also coded with a star when they were received by me. For example, uestionnaire coded I* means that the individual must lose 10-19 lbs. reach their correct weight while a questionnaire coded I means that individual has already lost 10-19 lbs. and is at their goal weight.

Once most of the questionnaires were received in both groups, they e boxed and shipped by U.P.S. to Dr. Amburn in Kansas.

# APPENDIX B

## SELF-ADMINISTERED QUESTIONNAIRE

SELF-ADMINISTERED QUESTIONNAIRE
(64 items)

Name _____
Last First MI

Address _____
Street or P.O. Box

_____
City State Zip

Phone _____

Birthdate _____ Sex _____
Month Day Year

Marital Status Check one: single( ) married( ) divorced( )

mate deceased _____

number of children _____

age of each child _____ _____ _____

_____ _____ _____ _____ _____ _____

Height _____

Weight _____

According to your family physician, state the number of pounds you are presently overweight. _____

What is the desired weight you would like to reach and maintain? _____

Please turn the page and carefully read the instructions. It will take approximately thirty minutes to complete the questionnaire.

Below is a list of statements. Please read each statement carefully and choose the option that most nearly describes your attitude at this time. There are no right or wrong answers. Try to choose an option for each statement.

Choose only one option for each statement and circle it.

1. I ___ eat three meals a day.

    1. always
    2. frequently
    3. sometimes
    4. never

2. I ___ eat hurriedly.

    1. always
    2. frequently
    3. sometimes
    4. never

3. I ___ skip a meal.

    1. always
    2. frequently
    3. sometimes
    4. never

4. I ___ eat only when I'm hungry and skip meals when I'm not.

    1. always
    2. frequently
    3. sometimes
    4. never

5. I ___ take at least 30 minutes for each meal.

    1. always
    2. frequently
    3. sometimes
    4. never

6. I ___ gulp my food.

    1. always
    2. frequently
    3. sometimes
    4. never

7. I ___ chew my food carefully and slowly.

   1. always
   2. frequently
   3. sometimes
   4. never

8. I ___ eat everything on my plate.

   1. always
   2. frequently
   3. sometimes
   4. never

9. I ___ have to add additional seasoning to my food before eating.

   1. always
   2. frequently
   3. sometimes
   4. never

10. I ___ buy prepared mixes rather than cook from scratch.

    1. always
    2. frequently
    3. sometimes
    4. never

11. I ___ use many spices when cooking.

    1. always
    2. frequently
    3. sometimes
    4. never

12. I ___ prepare a shopping list before I go to the grocery store.

    1. always
    2. frequently
    3. sometimes
    4. never

13. I ___ stick to the list.

    1. always
    2. frequently
    3. sometimes
    4. never

14. I ___ budget my food purchases and stick closely to that amount.

    1. always
    2. frequently
    3. sometimes
    4. never

15. I ___ buy coffee or tea rather than hot chocolate.

    1. always
    2. frequently
    3. sometimes
    4. never

16. I ___ buy white bread rather than wheat or rye.

    1. always
    2. frequently
    3. sometimes
    4. never

17. I ___ prefer buying hot cereals rather than prepared cold cereals.

    1. always
    2. frequently
    3. sometimes
    4. never

18. When I buy cold cereals, I ___ buy presweetened kinds.

    1. always
    2. frequently
    3. sometimes
    4. never

19. I ___ like to have some sort of seasoned or meat sauce on hand.

    1. always
    2. frequently
    3. sometimes
    4. never

20. I ___ have pickles, olives or some similar condiment on hand to serve with meals.

    1. always
    2. frequently
    3. sometimes
    4. never

21. I ___ buy whole milk rather than skimmed or low fat milk.

    1. always
    2. frequently
    3. sometimes
    4. never

22. I ___ have several different kinds of salad dressings available.

    1. always
    2. frequently
    3. sometimes
    4. never

23. I ___ cook with vegetable oil rather than shortening.

    1. always
    2. frequently
    3. sometimes
    4. never

24. I ___ prepare a weekly menu.

    1. always
    2. frequently
    3. sometimes
    4. never

25. I ___ do my shopping on impulse with little or no preparation.

    1. always
    2. frequently
    3. sometimes
    4. never

26-
29. According to your own cooking preferences, rank the following methods of preparing meat - baking, frying, boiling, or bar-b-quing - giving the method you most normally use the rank of 1; the next method the rank of 2, and so on.

    26. baking _____
    27. frying _____
    28. boiling _____
    29. bar-b-quing _____

The following items deal with the kinds of food you buy when doing your regular food purchasing. Please indicate whether each item is - 1. always; 2. frequently; 3. sometimes; or 4. never bought.

30. Soda pop -

1. always
2. frequently
3. sometimes
4. never

31. Beer -

1. always
2. frequently
3. sometimes
4. never

32. Bread, all kinds -

1. always
2. frequently
3. sometimes
4. never

33. Noodles, macaroni, or spaghetti -

1. always
2. frequently
3. sometimes
4. never

34. Pretzels, party crackers, chips, etc.

1. always
2. frequently
3. sometimes
4. never

35. Saltine crackers -

1. always
2. frequently
3. sometimes
4. never

36. Oleo -

1. always
2. frequently
3. sometimes
4. never

37. Butter -

1. always
2. frequently
3. sometimes
4. never

38. Cheese, all kinds -

1. always
2. frequently
3. sometimes
4. never

39. Yogurt -

1. always
2. frequently
3. sometimes
4. never

40. Cake mix -

1. always
2. frequently
3. sometimes
4. never

41. Cookies -

1. always
2. frequently
3. sometimes
4. never

42. Ice cream -

1. always
2. frequently
3. sometimes
4. never

43. Pudding mix -

1. always
2. frequently
3. sometimes
4. never

44. Pies -

1. always
2. frequently
3. sometimes
4. never

45. Vegetable oil or shortening -

1. always
2. frequently
3. sometimes
4. never

46. T.V. Dinners -

1. always
2. frequently
3. sometimes
4. never

47. Fruit, fresh -

1. always
2. frequently
3. sometimes
4. never

48. Fruit, canned -

1. always
2. frequently
3. sometimes
4. never

49. Seafood -

1. always
2. frequently
3. sometimes
4. never

50. Beef, all kinds -

1. always
2. frequently
3. sometimes
4. never

51. Pork -

1. always
2. frequently
3. sometimes
4. never

52. Chicken -

1. always
2. frequently
3. sometimes
4. never

53. Stew meat -

1. always
2. frequently
3. sometimes
4. never

54. Sausage -

1. always
2. frequently
3. sometimes
4. never

55. Sandwich meat -

1. always
2. frequently
3. sometimes
4. never

56. Canned meat -

1. always
2. frequently
3. sometimes
4. never

57. Frozen meat pies -

1. always
2. frequently
3. sometimes
4. never

58. Vegetables, fresh -

1. always
2. frequently
3. sometimes
4. never

59. Vegetables, canned or frozen -

1. always
2. frequently
3. sometimes
4. never

60. Nuts, all kinds -

1. always
2. frequently
3. sometimes
4. never

61. Candy -

1. always
2. frequently
3. sometimes
4. never

62. Sugar, white or brown -

1. always
2. frequently
3. sometimes
4. never

63. Syrup, all kinds -

1. always
2. frequently
3. sometimes
4. never

64. Popcorn -

1. always
2. frequently
3. sometimes
4. never

# APPENDIX C

## A COMPARISON OF SUCCESSFUL WEIGHT LOSS, OBESE AND NORMAL WEIGHT GROUPS OBTAINED FROM ANALYSIS OF VARIANCE FOR THOSE ITEMS RELATING TO EATING HABITS, FOOD PREPARATION AND FOOD PURCHASING

Table 4

A Comparison of Successful Weight Loss, Obese and Normal Weight Groups Obtained From Analysis of Variance For Those Items Relating to Eating Habits*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 2 | 6.82 | 3.41 | 0.93 | none |
| Within Groups | 495 | 1813.44 | 3.66 | | |
| Total | 497 | 1820.25 | | | |

Grouped Data

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Mean | 21.48 | 21.23 | 21.25 |
| Standard Deviation | 1.66 | 2.05 | 2.02 |
| N | 170 | 173 | 155 |

Scheffe Test for Multiple Comparisons

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Successful | 0.00 | 0.77 | 0.62 |
| Obese | 0.77 | 0.00 | 0.00 |
| Normal | 0.62 | 0.00 | 0.00 |

*See Appendix F, p. 117.

Table 5

A Comparison of Successful Weight Loss, Obese and Normal Weight Groups Obtained From Analysis of Variance For Those Items Relating to Food Preparation*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 2 | 207.63 | 103.81 | 6.72 | .01 |
| Within Groups | 495 | 7647.31 | 15.45 | | |
| Total | 497 | 7854.94 | | | |

Grouped Data

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Mean | 33.96 | 32.51 | 33.75 |
| Standard Deviation | 3.23 | 4.86 | 3.44 |
| N | 170 | 173 | 155 |

Scheffe Test for Multiple Comparisons

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Successful | 0.00 | 5.79 | 0.12 |
| Obese | 5.79 | 0.00 | 4.03 |
| Normal | 0.12 | 4.03 | 0.00 |

*See Appendix F, p. 117.

Table 6

A Comparison of Successful Weight Loss, Obese and Normal Weight Groups Obtained From Analysis of Variance For Those Items Relating to Food Purchasing*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 2 | 1741.00 | 870.50 | 6.09 | .01 |
| Within Groups | 495 | 70802.00 | 143.03 | | |
| Total | 497 | 72543.00 | | | |

Grouped Data

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Mean | 115.55 | 111.07 | 113.72 |
| Standard Deviation | 10.97 | 13.93 | 10.53 |
| N | 170 | 173 | 155 |

Scheffe Test for Multiple Comparisons

| Group | Successful | Obese | Normal |
|---|---|---|---|
| Successful | 0.00 | 6.03 | 0.95 |
| Obese | 6.03 | 0.00 | 2.01 |
| Normal | 0.95 | 2.01 | 0.00 |

*See Appendix F, p. 117.

# APPENDIX D

## A COMPARISON WITHIN SUCCESSFUL AND OBESE WEIGHT GROUPS OBTAINED FROM ANALYSIS OF VARIANCE FOR THOSE ITEMS RELATING TO EATING HABITS, FOOD PREPARATION AND FOOD PURCHASING

Table 7

A Comparison of Successful Weight Loss Groups Obtained From Analysis of Variance For Those Items Relating to Eating Habits*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 6.75 | 1.35 | 0.48 | none |
| Within Groups | 164 | 457.75 | 2.79 | | |
| Total | 169 | 464.50 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 21.49 | 21.73 | 21.33 | 21.52 | 21.65 | 21.08 |
| Standard Deviation | 1.58 | 1.78 | 1.62 | 1.37 | 1.80 | 1.91 |
| N | 35 | 26 | 21 | 33 | 31 | 24 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.06 | 0.02 | 0.00 | 0.03 | 0.17 |
| 21-30 pounds | 0.06 | 0.00 | 0.13 | 0.05 | 0.01 | 0.37 |
| 31-40 pounds | 0.02 | 0.13 | 0.00 | 0.03 | 0.09 | 0.05 |
| 41-50 pounds | 0.00 | 0.05 | 0.03 | 0.00 | 0.02 | 0.19 |
| 51-74 pounds | 0.03 | 0.01 | 0.09 | 0.02 | 0.00 | 0.31 |
| 75 pounds and over | 0.17 | 0.37 | 0.05 | 0.19 | 0.31 | 0.00 |

*See Appendix F, p. 117.

Table 8

A Comparison of Successful Weight Loss Groups Obtained From Analysis of Variance For Those Items Relating to Food Preparation*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 34.94 | 6.99 | 0.66 | none |
| Within Groups | 164 | 1723.88 | 10.51 | | |
| Total | 169 | 1758.81 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 33.37 | 33.54 | 34.05 | 34.06 | 34.16 | 34.79 |
| Standard Deviation | 2.65 | 2.85 | 3.02 | 3.96 | 3.23 | 3.53 |
| N | 35 | 26 | 21 | 33 | 31 | 24 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.01 | 0.11 | 0.15 | 0.20 | 0.55 |
| 21-30 pounds | 0.01 | 0.00 | 0.06 | 0.08 | 0.10 | 0.37 |
| 31-40 pounds | 0.11 | 0.06 | 0.00 | 0.00 | 0.00 | 0.12 |
| 41-50 pounds | 0.15 | 0.08 | 0.08 | 0.00 | 0.00 | 0.14 |
| 51-74 pounds | 0.20 | 0.10 | 0.00 | 0.00 | 0.00 | 0.10 |
| 75 pounds and over | 0.55 | 0.37 | 0.12 | 0.14 | 0.10 | 0.00 |

*See Appendix F, p. 117.

Table 9

A Comparison of Successful Weight Loss Groups Obtained From Analysis of Variance For Those Items Relating to Food Purchasing*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 39.00 | 7.80 | 0.06 | none |
| Within Groups | 164 | 20296.00 | 123.76 | | |
| Total | 169 | 20335.00 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 115.26 | 115.00 | 116.43 | 115.33 | 115.48 | 116.21 |
| Standard Deviation | 10.46 | 9.95 | 10.29 | 11.47 | 12.06 | 12.19 |
| N | 35 | 26 | 21 | 33 | 31 | 24 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.02 |
| 21-30 pounds | 0.00 | 0.00 | 0.04 | 0.00 | 0.01 | 0.03 |
| 31-40 pounds | 0.03 | 0.04 | 0.00 | 0.02 | 0.02 | 0.00 |
| 41-50 pounds | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 |
| 51-74 pounds | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.01 |
| 75 pounds and over | 0.02 | 0.03 | 0.00 | 0.02 | 0.01 | 0.00 |

*See Appendix F, p. 117.

Table 10

A Comparison of Obese Weight Groups Obtained From Analysis of Variance For Those Items Relating to Eating Habits*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 30.13 | 6.03 | 1.46 | none |
| Within Groups | 167 | 690.13 | 4.13 | | |
| Total | 172 | 720.25 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 21.76 | 21.00 | 20.65 | 21.82 | 21.36 | 21.00 |
| Standard Deviation | 1.89 | 2.14 | 2.12 | 2.10 | 2.28 | 1.72 |
| N | 34 | 29 | 31 | 17 | 28 | 34 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.44 | 0.98 | 0.00 | 0.12 | 0.48 |
| 21-30 pounds | 0.44 | 0.00 | 0.09 | 0.35 | 0.09 | 0.00 |
| 31-40 pounds | 0.98 | 0.09 | 0.00 | 0.74 | 0.36 | 0.10 |
| 41-50 pounds | 0.00 | 0.35 | 0.74 | 0.00 | 0.11 | 0.37 |
| 51-74 pounds | 0.12 | 0.09 | 0.36 | 0.11 | 0.00 | 0.09 |
| 75 pounds and over | 0.48 | 0.00 | 0.10 | 0.37 | 0.09 | 0.00 |

*See Appendix F, p. 117.

Table 11

A Comparison of Obese Weight Groups Obtained From Analysis of Variance for Those Items Relating to Food Preparation*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 159.00 | 31.80 | 1.36 | none |
| Within Groups | 167 | 3904.25 | 23.38 | | |
| Total | 172 | 4063.25 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 34.09 | 32.66 | 31.19 | 31.76 | 32.00 | 32.82 |
| Standard Deviation | 3.80 | 4.12 | 6.04 | 5.89 | 5.66 | 3.66 |
| N | 34 | 29 | 31 | 17 | 28 | 34 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.27 | 1.16 | 0.52 | 0.57 | 0.23 |
| 21-30 pounds | 0.27 | 0.00 | 0.27 | 0.07 | 0.05 | 0.00 |
| 31-40 pounds | 1.16 | 0.27 | 0.00 | 0.03 | 0.08 | 0.37 |
| 41-50 pounds | 0.52 | 0.07 | 0.03 | 0.00 | 0.01 | 0.11 |
| 51-74 pounds | 0.57 | 0.05 | 0.08 | 0.01 | 0.00 | 0.09 |
| 75 pounds and over | 0.23 | 0.00 | 0.37 | 0.11 | 0.09 | 0.00 |

*See Appendix F, p. 117.

Table 12

A Comparison of Obese Weight Groups Obtained From Analysis of Variance For Those Items Relating to Food Purchasing*

Sources of Variation

| Group | df | Sum of Squares | Mean Squares | F Ratio | level of significance |
|---|---|---|---|---|---|
| Between Groups | 5 | 1304.00 | 260.80 | 1.36 | none |
| Within Groups | 167 | 32093.00 | 192.17 | | |
| Total | 172 | 33397.00 | | | |

Grouped Data

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| Mean | 110.32 | 112.72 | 105.68 | 113.47 | 111.93 | 113.41 |
| Standard Deviation | 13.19 | 11.47 | 14.59 | 11.06 | 17.27 | 13.78 |
| N | 34 | 29 | 31 | 17 | 28 | 34 |

Scheffe Test for Multiple Comparisons

| Group | 11-20 pounds | 21-30 pounds | 31-40 pounds | 41-50 pounds | 51-74 pounds | 75 pounds and over |
|---|---|---|---|---|---|---|
| 11-20 pounds | 0.00 | 0.09 | 0.36 | 0.12 | 0.04 | 0.17 |
| 21-30 pounds | 0.09 | 0.00 | 0.77 | 0.01 | 0.01 | 0.01 |
| 31-40 pounds | 0.36 | 0.77 | 0.00 | 0.69 | 0.60 | 1.01 |
| 41-50 pounds | 0.12 | 0.01 | 0.69 | 0.00 | 0.03 | 0.00 |
| 51-74 pounds | 0.04 | 0.01 | 0.60 | 0.03 | 0.00 | 0.04 |
| 75 pounds and over | 0.17 | 0.01 | 1.01 | 0.00 | 0.04 | 0.00 |

*See Appendix F, p. 117.

# APPENDIX E

## ANALYSIS OF VARIANCE BETWEEN SUCCESSFUL, OBESE AND NORMAL WEIGHT GROUPS AND T-VALUES FOR EACH INDIVIDUAL ITEM COMPARISON

Table 13

Analysis of Variance Between Obese and Normal Groups and T-Value For Each Individual Item Comparison[44]

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 001 | | | | | | | |
| Obese | 112 | 1.79 | 0.92 | 0.09 | 1.41 | -5.52** | 210.90 |
| Normal | 109 | 2.53 | 1.09 | 0.10 | | | |
| 002 | | | | | | | |
| Obese | 112 | 2.41 | 0.89 | 0.08 | 1.13 | -0.26 | 218.74 |
| Normal | 109 | 2.44 | 0.83 | 0.08 | | | |
| 003 | | | | | | | |
| Obese | 112 | 3.12 | 0.78 | 0.07 | 1.37 | 4.46** | 211.87 |
| Normal | 109 | 2.61 | 0.91 | 0.09 | | | |
| 004 | | | | | | | |
| Obese | 112 | 3.33 | 0.64 | 0.06 | 1.97 | 3.52** | 194.79 |
| Normal | 109 | 2.96 | 0.89 | 0.09 | | | |

*Significant at the .05 level of confidence
**Significant at the .01 level of confidence

[44]Marigold Linton and Philip S. Gallo, Jr., The Practical Statistician: Simplified Handbook of Statistics, p. 370.

Table 13--Continued

| Item | Number Of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 005 | | | | | | | |
| Obese | 112 | 3.33 | 0.76 | 0.07 | | | |
| | | | | | 1.58 | 4.86** | 205.88 |
| Normal | 109 | 2.76 | 0.96 | 0.09 | | | |
| 006 | | | | | | | |
| Obese | 112 | 2.87 | 0.91 | 0.09 | | | |
| | | | | | 1.15 | -2.07* | 218.57 |
| Normal | 109 | 3.11 | 0.84 | 0.08 | | | |
| 007 | | | | | | | |
| Obese | 112 | 2.76 | 0.85 | 0.08 | | | |
| | | | | | 1.01 | 0.62 | 218.90 |
| Normal | 109 | 2.69 | 0.85 | 0.08 | | | |
| 008 | | | | | | | |
| Obese | 112 | 1.72 | 0.77 | 0.07 | | | |
| | | | | | 1.27 | -3.41** | 214.50 |
| Normal | 109 | 2.10 | 0.87 | 0.08 | | | |
| 009 | | | | | | | |
| Obese | 112 | 2.82 | 0.94 | 0.09 | | | |
| | | | | | 1.04 | 0.26 | 218.99 |
| Normal | 109 | 2.79 | 0.92 | 0.09 | | | |
| 010 | | | | | | | |
| Obese | 112 | 2.71 | 0.78 | 0.07 | | | |
| | | | | | 1.17 | 0.26 | 218.39 |
| Normal | 109 | 2.69 | 0.72 | 0.07 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 011 | | | | | | | |
| Obese | 112 | 2.60 | 0.88 | 0.08 | | | |
| | | | | | 1.05 | -2.12* | 219.00 |
| Normal | 109 | 2.84 | 0.85 | 0.08 | | | |
| 012 | | | | | | | |
| Obese | 112 | 2.34 | 1.10 | 0.10 | | | |
| | | | | | 1.18 | 0.71 | 218.37 |
| Normal | 109 | 2.24 | 1.02 | 0.10 | | | |
| 013 | | | | | | | |
| Obese | 112 | 2.69 | 0.94 | 0.09 | | | |
| | | | | | 1.08 | 0.88 | 218.98 |
| Normal | 109 | 2.58 | 0.91 | 0.09 | | | |
| 014 | | | | | | | |
| Obese | 112 | 2.66 | 1.02 | 0.10 | | | |
| | | | | | 1.00 | -1.14 | 218.82 |
| Normal | 109 | 2.82 | 1.02 | 0.10 | | | |
| 015 | | | | | | | |
| Obese | 112 | 1.79 | 1.04 | 0.10 | | | |
| | | | | | 1.14 | 0.11 | 218.69 |
| Normal | 109 | 1.78 | 0.98 | 0.09 | | | |
| 016 | | | | | | | |
| Obese | 112 | 2.38 | 1.07 | 0.10 | | | |
| | | | | | 1.10 | -1.07 | 217.82 |
| Normal | 109 | 2.54 | 1.12 | 0.11 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 017 | | | | | | | |
| Obese | 112 | 3.27 | 0.75 | 0.07 | | | |
| | | | | | 1.31 | 2.90** | 213.54 |
| Normal | 109 | 2.95 | 0.85 | 0.08 | | | |
| 018 | | | | | | | |
| Obese | 112 | 3.23 | 0.88 | 0.08 | | | |
| | | | | | 1.03 | 0.18 | 218.61 |
| Normal | 109 | 3.21 | 0.89 | 0.09 | | | |
| 019 | | | | | | | |
| Obese | 112 | 2.18 | 1.04 | 0.10 | | | |
| | | | | | 1.01 | 1.47 | 218.74 |
| Normal | 109 | 1.97 | 1.05 | 0.10 | | | |
| 020 | | | | | | | |
| Obese | 112 | 2.36 | 1.00 | 0.10 | | | |
| | | | | | 1.02 | -0.95 | 218.67 |
| Normal | 109 | 2.49 | 1.02 | 0.10 | | | |
| 021 | | | | | | | |
| Obese | 112 | 3.06 | 1.21 | 0.11 | | | |
| | | | | | 1.30 | 2.09* | 213.80 |
| Normal | 109 | 2.70 | 1.38 | 0.13 | | | |
| 022 | | | | | | | |
| Obese | 112 | 2.19 | 1.08 | 0.10 | | | |
| | | | | | 1.03 | -1.17 | 218.63 |
| Normal | 109 | 2.36 | 1.09 | 0.11 | | | |

Table 13—Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 023 | | | | | | | |
| Obese | 112 | 2.18 | 1.09 | 0.10 | | | |
| | | | | | 1.24 | 0.56 | 217.60 |
| Normal | 109 | 2.10 | 0.98 | 0.09 | | | |
| 024 | | | | | | | |
| Obese | 112 | 3.63 | 0.66 | 0.06 | | | |
| | | | | | 1.42 | 0.58 | 210.50 |
| Normal | 109 | 3.57 | 0.79 | 0.08 | | | |
| 025 | | | | | | | |
| Obese | 112 | 3.08 | 0.82 | 0.08 | | | |
| | | | | | 1.29 | 0.76 | 214.03 |
| Normal | 109 | 2.99 | 0.93 | 0.09 | | | |
| 026 | | | | | | | |
| Obese | 112 | 1.45 | 0.84 | 0.08 | | | |
| | | | | | 1.09 | -2.11* | 218.95 |
| Normal | 109 | 1.67 | 0.77 | 0.07 | | | |
| 027 | | | | | | | |
| Obese | 112 | 2.40 | 1.08 | 0.10 | | | |
| | | | | | 1.08 | 3.86** | 218.96 |
| Normal | 109 | 1.85 | 1.04 | 0.10 | | | |
| 028 | | | | | | | |
| Obese | 112 | 3.15 | 0.80 | 0.08 | | | |
| | | | | | 1.01 | 0.73 | 218.75 |
| Normal | 109 | 3.07 | 0.80 | 0.08 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 029 | | | | | | | |
| Obese | 112 | 3.00 | 0.89 | 0.08 | | | |
| | | | | | 1.70 | -3.79** | 207.63 |
| Normal | 109 | 3.40 | 0.68 | 0.07 | | | |
| 030 | | | | | | | |
| Obese | 112 | 2.11 | 0.95 | 0.09 | | | |
| | | | | | 1.21 | -3.40** | 218.03 |
| Normal | 109 | 2.52 | 0.87 | 0.08 | | | |
| 031 | | | | | | | |
| Obese | 112 | 3.39 | 0.87 | 0.08 | | | |
| | | | | | 1.01 | 1.08 | 218.77 |
| Normal | 109 | 3.27 | 0.88 | 0.08 | | | |
| 032 | | | | | | | |
| Obese | 112 | 1.58 | 0.82 | 0.08 | | | |
| | | | | | 1.30 | -1.91 | 213.79 |
| Normal | 109 | 1.81 | 0.94 | 0.09 | | | |
| 033 | | | | | | | |
| Obese | 112 | 2.50 | 0.84 | 0.08 | | | |
| | | | | | 1.00 | 1.99* | 218.85 |
| Normal | 109 | 2.28 | 0.84 | 0.08 | | | |
| 034 | | | | | | | |
| Obese | 112 | 2.60 | 0.96 | 0.09 | | | |
| | | | | | 1.35 | -0.06 | 215.74 |
| Normal | 109 | 2.61 | 0.83 | 0.08 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 035 | | | | | | | |
| Obese | 112 | 2.47 | 0.95 | 0.09 | | | |
| | | | | | 1.00 | -0.61 | 218.85 |
| Normal | 109 | 2.55 | 0.95 | 0.09 | | | |
| 036 | | | | | | | |
| Obese | 112 | 1.81 | 1.01 | 0.10 | | | |
| | | | | | 1.03 | 0.10 | 218.59 |
| Normal | 109 | 1.80 | 1.03 | 0.10 | | | |
| 037 | | | | | | | |
| Obese | 112 | 3.33 | 1.03 | 0.10 | | | |
| | | | | | 1.14 | -0.27 | 218.68 |
| Normal | 109 | 3.37 | 0.97 | 0.09 | | | |
| 038 | | | | | | | |
| Obese | 112 | 1.63 | 0.76 | 0.07 | | | |
| | | | | | 1.13 | -2.69** | 217.33 |
| Normal | 109 | 1.92 | 0.81 | 0.08 | | | |
| 039 | | | | | | | |
| Obese | 112 | 3.49 | 0.74 | 0.07 | | | |
| | | | | | 1.24 | 0.66 | 215.04 |
| Normal | 109 | 3.42 | 0.82 | 0.08 | | | |
| 040 | | | | | | | |
| Obese | 112 | 2.88 | 0.67 | 0.06 | | | |
| | | | | | 1.19 | -0.45 | 216.15 |
| Normal | 109 | 2.93 | 0.73 | 0.07 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 041 | | | | | | | |
| Obese | 112 | 2.76 | 0.80 | 0.08 | | | |
| | | | | | 1.04 | -0.28 | 218.98 |
| Normal | 109 | 2.79 | 0.78 | 0.08 | | | |
| 042 | | | | | | | |
| Obese | 112 | 2.58 | 0.93 | 0.09 | | | |
| | | | | | 1.31 | -1.39 | 216.53 |
| Normal | 109 | 2.74 | 0.81 | 0.08 | | | |
| 043 | | | | | | | |
| Obese | 112 | 3.00 | 0.71 | 0.07 | | | |
| | | | | | 1.17 | 0.18 | 216.51 |
| Normal | 109 | 2.98 | 0.77 | 0.07 | | | |
| 044 | | | | | | | |
| Obese | 112 | 3.50 | 0.71 | 0.07 | | | |
| | | | | | 2.15 | -2.30* | 196.46 |
| Normal | 109 | 3.69 | 0.49 | 0.05 | | | |
| 045 | | | | | | | |
| Obese | 112 | 2.33 | 0.80 | 0.08 | | | |
| | | | | | 1.32 | 2.06* | 213.13 |
| Normal | 109 | 2.09 | 0.92 | 0.09 | | | |
| 046 | | | | | | | |
| Obese | 112 | 3.56 | 0.64 | 0.06 | | | |
| | | | | | 1.02 | 2.17* | 218.92 |
| Normal | 109 | 3.38 | 0.64 | 0.06 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 047 | | | | | | | |
| Obese | 112 | 1.36 | 0.58 | 0.06 | | | |
| | | | | | 2.00 | -3.44** | 193.98 |
| Normal | 109 | 1.69 | 0.82 | 0.08 | | | |
| 048 | | | | | | | |
| Obese | 112 | 2.20 | 0.84 | 0.08 | | | |
| | | | | | 1.13 | -2.34* | 217.37 |
| Normal | 109 | 2.47 | 0.89 | 0.09 | | | |
| 049 | | | | | | | |
| Obese | 112 | 2.30 | 0.87 | 0.82 | | | |
| | | | | | 1.32 | -4.52** | 216.29 |
| Normal | 109 | 2.80 | 0.76 | 0.07 | | | |
| 050 | | | | | | | |
| Obese | 112 | 1.55 | 0.82 | 0.08 | | | |
| | | | | | 1.15 | -2.07* | 217.03 |
| Normal | 109 | 1.79 | 0.87 | 0.08 | | | |
| 051 | | | | | | | |
| Obese | 112 | 2.65 | 0.87 | 0.08 | | | |
| | | | | | 1.15 | 0.65 | 218.61 |
| Normal | 109 | 2.58 | 0.81 | 0.08 | | | |
| 052 | | | | | | | |
| Obese | 112 | 1.45 | 0.67 | 0.06 | | | |
| | | | | | 1.57 | -5.78** | 206.29 |
| Normal | 109 | 2.04 | 0.84 | 0.08 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 053 | | | | | | | |
| Obese | 112 | 2.82 | 0.82 | 0.08 | | | |
| | | | | | 1.02 | -1.12 | 218.72 |
| Normal | 109 | 2.95 | 0.83 | 0.08 | | | |
| 054 | | | | | | | |
| Obese | 112 | 3.04 | 0.68 | 0.06 | | | |
| | | | | | 1.24 | 0.52 | 217.67 |
| Normal | 109 | 3.00 | 0.61 | 0.06 | | | |
| 055 | | | | | | | |
| Obese | 112 | 2.58 | 0.92 | 0.09 | | | |
| | | | | | 1.18 | 0.17 | 218.32 |
| Normal | 109 | 2.56 | 0.84 | 0.08 | | | |
| 056 | | | | | | | |
| Obese | 112 | 3.40 | 0.64 | 0.06 | | | |
| | | | | | 1.07 | -0.34 | 218.19 |
| Normal | 109 | 3.43 | 0.66 | 0.06 | | | |
| 057 | | | | | | | |
| Obese | 112 | 3.53 | 0.62 | 0.06 | | | |
| | | | | | 1.15 | -0.17 | 216.89 |
| Normal | 109 | 3.54 | 0.66 | 0.06 | | | |
| 058 | | | | | | | |
| Obese | 112 | 1.53 | 0.76 | 0.07 | | | |
| | | | | | 1.53 | -3.32** | 207.47 |
| Normal | 109 | 1.91 | 0.94 | 0.09 | | | |

Table 13--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 059 | | | | | | | |
| Obese | 112 | 1.53 | 0.72 | 0.07 | | | |
| | | | | | 1.25 | -1.83 | 215.00 |
| Normal | 109 | 1.72 | 0.81 | 0.08 | | | |
| 060 | | | | | | | |
| Obese | 112 | 3.07 | 0.63 | 0.06 | | | |
| | | | | | 1.39 | 0.48 | 211.25 |
| Normal | 109 | 3.03 | 0.74 | 0.07 | | | |
| 061 | | | | | | | |
| Obese | 112 | 3.08 | 0.63 | 0.06 | | | |
| | | | | | 1.07 | -1.23 | 218.99 |
| Normal | 109 | 3.19 | 0.61 | 0.06 | | | |
| 062 | | | | | | | |
| Obese | 112 | 2.37 | 0.96 | 0.09 | | | |
| | | | | | 1.24 | 1.71 | 217.67 |
| Normal | 109 | 2.16 | 0.86 | 0.08 | | | |
| 063 | | | | | | | |
| Obese | 112 | 3.01 | 0.81 | 0.08 | | | |
| | | | | | 1.80 | 1.33 | 205.17 |
| Normal | 109 | 2.88 | 0.60 | 0.06 | | | |
| 064 | | | | | | | |
| Obese | 112 | 2.66 | 0.94 | 0.09 | | | |
| | | | | | 1.01 | -0.14 | 218.75 |
| Normal | 109 | 2.68 | 0.94 | 0.09 | | | |

Table 14

Analysis of Variance Between Successful Weight Loss and Obese Groups and T-Value For Each Individual Item Comparison[45]

| Item | Number Of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 001 | | | | | | | |
| Successful | 131 | 1.47 | 0.74 | 0.06 | | | |
| | | | | | 1.54 | -2.90** | 212.56 |
| Obese | 112 | 1.79 | 0.92 | 0.09 | | | |
| 002 | | | | | | | |
| Successful | 131 | 2.63 | 0.86 | 0.08 | | | |
| | | | | | 1.06 | 1.91 | 233.08 |
| Obese | 112 | 2.41 | 0.89 | 0.08 | | | |
| 003 | | | | | | | |
| Successful | 131 | 3.40 | 0.69 | 0.06 | | | |
| | | | | | 1.28 | 3.03** | 223.44 |
| Obese | 112 | 3.12 | 0.78 | 0.07 | | | |
| 004 | | | | | | | |
| Successful | 131 | 3.51 | 0.66 | 0.06 | | | |
| | | | | | 1.08 | 2.17* | 237.68 |
| Obese | 112 | 3.33 | 0.64 | 0.06 | | | |

*Significant at the .05 level of confidence
**Significant at the .01 level of confidence

[45]Marigold Linton and Philip S. Gallo, Jr., The Practical Statistician: Simplified Handbook of Statistics, p. 370.

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 005 | | | | | | | |
| Successful | 131 | 2.95 | 0.92 | 0.08 | | | |
| | | | | | 1.46 | -3.55** | 240.77 |
| Obese | 112 | 3.33 | 0.76 | 0.07 | | | |
| 006 | | | | | | | |
| Successful | 131 | 3.25 | 0.73 | 0.06 | | | |
| | | | | | 1.55 | 3.62** | 212.06 |
| Obese | 112 | 2.87 | 0.91 | 0.09 | | | |
| 007 | | | | | | | |
| Successful | 131 | 2.53 | 0.94 | 0.08 | | | |
| | | | | | 1.22 | -1.95 | 240.14 |
| Obese | 112 | 2.76 | 0.85 | 0.08 | | | |
| 008 | | | | | | | |
| Successful | 131 | 1.69 | 0.72 | 0.06 | | | |
| | | | | | 1.14 | -0.37 | 229.59 |
| Obese | 112 | 1.72 | 0.77 | 0.07 | | | |
| 009 | | | | | | | |
| Successful | 131 | 2.95 | 0.87 | 0.08 | | | |
| | | | | | 1.18 | 1.14 | 227.96 |
| Obese | 112 | 2.82 | 0.94 | 0.09 | | | |
| 010 | | | | | | | |
| Successful | 131 | 3.05 | 0.61 | 0.05 | | | |
| | | | | | 1.64 | 3.67** | 208.49 |
| Obese | 112 | 2.71 | 0.78 | 0.07 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 011 | | | | | | | |
| Successful | 131 | 2.66 | 0.92 | 0.08 | | | |
| | | | | | 1.10 | 0.57 | 238.08 |
| Obese | 112 | 2.60 | 0.88 | 0.08 | | | |
| 012 | | | | | | | |
| Successful | 131 | 1.82 | 0.95 | 0.08 | | | |
| | | | | | 1.35 | -3.87** | 220.45 |
| Obese | 112 | 2.34 | 1.10 | 0.10 | | | |
| 013 | | | | | | | |
| Successful | 131 | 2.26 | 0.92 | 0.08 | | | |
| | | | | | 1.05 | -3.58** | 233.21 |
| Obese | 112 | 2.69 | 0.94 | 0.09 | | | |
| 014 | | | | | | | |
| Successful | 131 | 2.33 | 0.96 | 0.08 | | | |
| | | | | | 1.13 | -2.61** | 229.89 |
| Obese | 112 | 2.66 | 1.02 | 0.10 | | | |
| 015 | | | | | | | |
| Successful | 131 | 1.66 | 0.92 | 0.08 | | | |
| | | | | | 1.29 | -1.09 | 223.36 |
| Obese | 112 | 1.79 | 1.04 | 0.10 | | | |
| 016 | | | | | | | |
| Successful | 131 | 2.69 | 0.99 | 0.09 | | | |
| | | | | | 1.16 | 2.28* | 228.97 |
| Obese | 112 | 2.38 | 1.07 | 0.10 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 017 | | | | | | | |
| Successful | 131 | 3.31 | 0.72 | 0.06 | | | |
| | | | | | 1.07 | 0.40 | 232.48 |
| Obese | 112 | 3.27 | 0.75 | 0.07 | | | |
| 018 | | | | | | | |
| Successful | 131 | 3.43 | 0.85 | 0.07 | | | |
| | | | | | 1.07 | 1.75 | 232.49 |
| Obese | 112 | 3.23 | 0.88 | 0.08 | | | |
| 019 | | | | | | | |
| Successful | 131 | 2.40 | 1.09 | 0.10 | | | |
| | | | | | 1.10 | 1.65 | 238.19 |
| Obese | 112 | 2.18 | 1.04 | 0.10 | | | |
| 020 | | | | | | | |
| Successful | 131 | 2.28 | 0.97 | 0.09 | | | |
| | | | | | 1.07 | -0.59 | 232.60 |
| Obese | 112 | 2.36 | 1.00 | 0.10 | | | |
| 021 | | | | | | | |
| Successful | 131 | 3.60 | 0.86 | 0.08 | | | |
| | | | | | 1.99 | 3.90** | 195.90 |
| Obese | 112 | 3.06 | 1.21 | 0.11 | | | |
| 022 | | | | | | | |
| Successful | 131 | 2.11 | 1.06 | 0.09 | | | |
| | | | | | 1.04 | -0.53 | 233.66 |
| Obese | 112 | 2.19 | 1.08 | 0.10 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 023 | | | | | | | |
| Successful | 131 | 2.15 | 0.98 | 0.09 | | | |
| | | | | | 1.24 | -0.19 | 225.30 |
| Obese | 112 | 2.18 | 1.09 | 0.10 | | | |
| 024 | | | | | | | |
| Successful | 131 | 3.34 | 0.86 | 0.08 | | | |
| | | | | | 1.69 | -2.89** | 238.44 |
| Obese | 112 | 3.63 | 0.66 | 0.06 | | | |
| 025 | | | | | | | |
| Successful | 131 | 3.34 | 0.73 | 0.06 | | | |
| | | | | | 1.25 | 2.62** | 224.88 |
| Obese | 112 | 3.08 | 0.82 | 0.08 | | | |
| 026 | | | | | | | |
| Successful | 131 | 1.46 | 0.89 | 0.08 | | | |
| | | | | | 1.22 | 0.04 | 240.20 |
| Obese | 112 | 1.45 | 0.80 | 0.08 | | | |
| 027 | | | | | | | |
| Successful | 131 | 2.68 | 1.07 | 0.09 | | | |
| | | | | | 1.02 | 2.01* | 234.56 |
| Obese | 112 | 2.40 | 1.08 | 0.10 | | | |
| 028 | | | | | | | |
| Successful | 131 | 2.95 | 0.87 | 0.08 | | | |
| | | | | | 1.20 | -1.92 | 239.89 |
| Obese | 112 | 3.15 | 0.80 | 0.08 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 029 | | | | | | | |
| Successful | 131 | 2.94 | 0.89 | 0.08 | | | |
| | | | | | 1.00 | -0.53 | 235.32 |
| Obese | 112 | 3.00 | 0.89 | 0.08 | | | |
| 030 | | | | | | | |
| Successful | 131 | 2.31 | 0.98 | 0.09 | | | |
| | | | | | 1.05 | 1.66 | 236.88 |
| Obese | 112 | 2.11 | 0.95 | 0.09 | | | |
| 031 | | | | | | | |
| Successful | 131 | 3.57 | 0.63 | 0.06 | | | |
| | | | | | 1.91 | 1.81 | 198.78 |
| Obese | 112 | 3.39 | 0.87 | 0.08 | | | |
| 032 | | | | | | | |
| Successful | 131 | 1.72 | 0.91 | 0.08 | | | |
| | | | | | 1.21 | 1.24 | 240.06 |
| Obese | 112 | 1.58 | 0.82 | 0.08 | | | |
| 033 | | | | | | | |
| Successful | 131 | 2.84 | 0.72 | 0.08 | | | |
| | | | | | 1.35 | 3.36** | 220.55 |
| Obese | 112 | 2.50 | 0.84 | 0.08 | | | |
| 034 | | | | | | | |
| Successful | 131 | 2.89 | 0.78 | 0.07 | | | |
| | | | | | 1.54 | 2.60** | 212.72 |
| Obese | 112 | 2.00 | 0.96 | 0.09 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 035 | | | | | | | |
| Successful | 131 | 2.69 | 0.78 | 0.07 | | | |
| | | | | | 1.47 | 1.96 | 215.58 |
| Obese | 112 | 2.47 | 0.95 | 0.09 | | | |
| 036 | | | | | | | |
| Successful | 131 | 2.13 | 1.09 | 0.10 | | | |
| | | | | | 1.17 | 2.35* | 239.49 |
| Obese | 112 | 1.81 | 1.01 | 0.10 | | | |
| 037 | | | | | | | |
| Successful | 131 | 3.32 | 1.06 | 0.09 | | | |
| | | | | | 1.05 | -0.07 | 236.90 |
| Obese | 112 | 3.33 | 1.03 | 0.10 | | | |
| 038 | | | | | | | |
| Successful | 131 | 1.68 | 0.82 | 0.07 | | | |
| | | | | | 1.15 | 0.45 | 239.25 |
| Obese | 112 | 1.63 | 0.76 | 0.07 | | | |
| 039 | | | | | | | |
| Successful | 131 | 3.57 | 0.72 | 0.06 | | | |
| | | | | | 1.03 | 0.87 | 233.97 |
| Obese | 112 | 3.49 | 0.74 | 0.07 | | | |
| 040 | | | | | | | |
| Successful | 131 | 3.08 | 0.71 | 0.06 | | | |
| | | | | | 1.14 | 2.26* | 238.98 |
| Obese | 112 | 2.88 | 0.67 | 0.06 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 041 | | | | | | | |
| Successful | 131 | 3.04 | 0.68 | 0.06 | | | |
| | | | | | 1.36 | 2.90** | 220.24 |
| Obese | 112 | 2.76 | 0.80 | 0.08 | | | |
| 042 | | | | | | | |
| Successful | 131 | 2.76 | 0.80 | 0.07 | | | |
| | | | | | 1.33 | 1.63 | 221.28 |
| Obese | 112 | 2.58 | 0.93 | 0.09 | | | |
| 043 | | | | | | | |
| Successful | 131 | 3.22 | 0.67 | 0.06 | | | |
| | | | | | 1.12 | 2.48* | 230.49 |
| Obese | 112 | 3.00 | 0.71 | 0.07 | | | |
| 044 | | | | | | | |
| Successful | 131 | 3.66 | 0.51 | 0.04 | | | |
| | | | | | 1.97 | 2.04* | 196.49 |
| Obese | 112 | 3.50 | 0.71 | 0.07 | | | |
| 045 | | | | | | | |
| Successful | 131 | 2.45 | 0.86 | 0.08 | | | |
| | | | | | 1.16 | 1.13 | 239.40 |
| Obese | 112 | 2.33 | 0.80 | 0.08 | | | |
| 046 | | | | | | | |
| Successful | 131 | 3.67 | 0.53 | 0.05 | | | |
| | | | | | 1.45 | 1.43 | 216.42 |
| Obese | 112 | 3.56 | 0.64 | 0.06 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 047 | | | | | | | |
| Successful | 131 | 1.28 | 0.52 | 0.05 | | | |
| | | | | | 1.28 | -1.05 | 223.69 |
| Obese | 112 | 1.36 | 0.58 | 0.06 | | | |
| 048 | | | | | | | |
| Successful | 131 | 2.37 | 0.81 | 0.07 | | | |
| | | | | | 1.08 | 1.61 | 232.20 |
| Obese | 112 | 2.20 | 0.84 | 0.08 | | | |
| 049 | | | | | | | |
| Successful | 131 | 2.18 | 0.87 | 0.08 | | | |
| | | | | | 1.00 | -1.08 | 235.02 |
| Obese | 112 | 2.30 | 0.87 | 0.08 | | | |
| 050 | | | | | | | |
| Successful | 131 | 1.67 | 0.75 | 0.07 | | | |
| | | | | | 1.18 | 1.17 | 227.78 |
| Obese | 112 | 1.55 | 0.82 | 0.08 | | | |
| 051 | | | | | | | |
| Successful | 131 | 3.04 | 0.74 | 0.06 | | | |
| | | | | | 1.38 | 3.71** | 219.29 |
| Obese | 112 | 2.65 | 0.87 | 0.08 | | | |
| 052 | | | | | | | |
| Successful | 131 | 1.37 | 0.57 | 0.05 | | | |
| | | | | | 1.37 | 0.99 | 219.63 |
| Obese | 112 | 1.45 | 0.67 | 0.06 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 053 | | | | | | | |
| Successful | 131 | 2.91 | 0.83 | 0.07 | | | |
| | | | | | 1.02 | 0.82 | 235.85 |
| Obese | 112 | 2.82 | 0.82 | 0.08 | | | |
| 054 | | | | | | | |
| Successful | 131 | 3.25 | 0.65 | 0.06 | | | |
| | | | | | 1.09 | 2.43* | 231.81 |
| Obese | 112 | 3.04 | 0.68 | 0.06 | | | |
| 055 | | | | | | | |
| Successful | 131 | 2.72 | 0.95 | 0.08 | | | |
| | | | | | 1.07 | 1.15 | 237.28 |
| Obese | 112 | 2.58 | 0.92 | 0.09 | | | |
| 056 | | | | | | | |
| Successful | 131 | 3.52 | 0.65 | 0.06 | | | |
| | | | | | 1.04 | 1.42 | 236.49 |
| Obese | 112 | 3.40 | 0.64 | 0.06 | | | |
| 057 | | | | | | | |
| Successful | 131 | 3.68 | 0.52 | 0.05 | | | |
| | | | | | 1.42 | 2.08* | 217.49 |
| Obese | 112 | 3.53 | 0.62 | 0.06 | | | |
| 058 | | | | | | | |
| Successful | 131 | 1.44 | 0.70 | 0.06 | | | |
| | | | | | 1.16 | -0.89 | 228.63 |
| Obese | 112 | 1.53 | 0.76 | 0.07 | | | |

Table 14--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 059 | | | | | | | |
| Successful | 131 | 1.73 | 0.77 | 0.07 | | | |
| | | | | | 1.12 | 2.08* | 238.62 |
| Obese | 112 | 1.53 | 0.72 | 0.07 | | | |
| 060 | | | | | | | |
| Successful | 131 | 3.17 | 0.56 | 0.05 | | | |
| | | | | | 1.26 | 1.26 | 224.41 |
| Obese | 112 | 3.07 | 0.63 | 0.06 | | | |
| 061 | | | | | | | |
| Successful | 131 | 3.27 | 0.54 | 0.05 | | | |
| | | | | | 1.36 | 2.55* | 220.11 |
| Obese | 112 | 3.08 | 0.63 | 0.06 | | | |
| 062 | | | | | | | |
| Successful | 131 | 2.61 | 0.83 | 0.07 | | | |
| | | | | | 1.34 | 2.11* | 221.01 |
| Obese | 112 | 2.37 | 0.96 | 0.09 | | | |
| 063 | | | | | | | |
| Successful | 131 | 3.07 | 0.69 | 0.06 | | | |
| | | | | | 1.37 | 0.61 | 219.69 |
| Obese | 112 | 3.01 | 0.81 | 0.08 | | | |
| 064 | | | | | | | |
| Successful | 131 | 2.71 | 0.95 | 0.08 | | | |
| | | | | | 1.02 | 0.47 | 236.02 |
| Obese | 112 | 2.66 | 0.94 | 0.09 | | | |

Table 15

Analysis of Variance Between Successful Weight Loss and Normal Groups and T-Value For Each Individual Item Comparison[46]

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 001 | | | | | | | |
| Successful | 131 | 1.47 | 0.74 | 0.06 | | | |
| | | | | | 2.17 | -8.66** | 184.32 |
| Normal | 109 | 2.53 | 1.09 | 0.10 | | | |
| 002 | | | | | | | |
| Successful | 131 | 2.63 | 0.86 | 0.08 | | | |
| | | | | | 1.07 | 1.69 | 232.78 |
| Normal | 109 | 2.44 | 0.83 | 0.08 | | | |
| 003 | | | | | | | |
| Successful | 131 | 3.40 | 0.69 | 0.06 | | | |
| | | | | | 1.76 | 7.53** | 197.55 |
| Normal | 109 | 2.61 | 0.91 | 0.09 | | | |
| 004 | | | | | | | |
| Successful | 131 | 3.51 | 0.66 | 0.06 | | | |
| | | | | | 1.82 | 5.32** | 195.34 |
| Normal | 109 | 2.96 | 0.89 | 0.09 | | | |

*Significant at the .05 level of confidence
**Significant at the .01 level of confidence

[46]Marigold Linton and Philip S. Gallo, Jr., The Practical Statistician: Simplified Handbook of Statistics, p. 370.

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 005 | | | | | | | |
| Successful | 131 | 2.95 | 0.92 | 0.08 | | | |
| | | | | | 1.09 | 1.51 | 226.46 |
| Normal | 109 | 2.76 | 0.96 | 0.09 | | | |
| 006 | | | | | | | |
| Successful | 131 | 3.25 | 0.73 | 0.06 | | | |
| | | | | | 1.34 | 1.38 | 214.75 |
| Normal | 109 | 3.11 | 0.84 | 0.08 | | | |
| 007 | | | | | | | |
| Successful | 131 | 2.53 | 0.94 | 0.08 | | | |
| | | | | | 1.23 | -1.33 | 236.44 |
| Normal | 109 | 2.69 | 0.85 | 0.08 | | | |
| 008 | | | | | | | |
| Successful | 131 | 1.69 | 0.72 | 0.06 | | | |
| | | | | | 1.45 | -3.95** | 210.22 |
| Normal | 109 | 2.10 | 0.87 | 0.08 | | | |
| 009 | | | | | | | |
| Successful | 131 | 2.95 | 0.87 | 0.08 | | | |
| | | | | | 1.13 | 1.42 | 224.26 |
| Normal | 109 | 2.79 | 0.92 | 0.09 | | | |
| 010 | | | | | | | |
| Successful | 131 | 3.05 | 0.61 | 0.05 | | | |
| | | | | | 1.40 | 4.13** | 212.37 |
| Normal | 109 | 2.69 | 0.72 | 0.07 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 011 | | | | | | | |
| Successful | 131 | 2.66 | 0.92 | 0.08 | | | |
| | | | | | 1.16 | -1.57 | 235.08 |
| Normal | 109 | 2.84 | 0.85 | 0.08 | | | |
| 012 | | | | | | | |
| Successful | 131 | 1.82 | 0.95 | 0.08 | | | |
| | | | | | 1.15 | -3.24** | 223.56 |
| Normal | 109 | 2.24 | 1.02 | 0.10 | | | |
| 013 | | | | | | | |
| Successful | 131 | 2.26 | 0.92 | 0.08 | | | |
| | | | | | 1.02 | -2.70** | 231.07 |
| Normal | 109 | 2.58 | 0.91 | 0.09 | | | |
| 014 | | | | | | | |
| Successful | 131 | 2.33 | 0.96 | 0.08 | | | |
| | | | | | 1.14 | -3.80** | 224.16 |
| Normal | 109 | 2.82 | 1.02 | 0.10 | | | |
| 015 | | | | | | | |
| Successful | 131 | 1.66 | 0.92 | 0.08 | | | |
| | | | | | 1.13 | -1.00 | 224.55 |
| Normal | 109 | 1.78 | 0.98 | 0.09 | | | |
| 016 | | | | | | | |
| Successful | 131 | 2.69 | 0.99 | 0.09 | | | |
| | | | | | 1.27 | 1.06 | 218.17 |
| Normal | 109 | 2.54 | 1.12 | 0.11 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 017 | | | | | | | |
| Successful | 131 | 3.31 | 0.72 | 0.06 | | | |
| | | | | | 1.40 | 3.40** | 212.30 |
| Normal | 109 | 2.95 | 0.85 | 0.08 | | | |
| 018 | | | | | | | |
| Successful | 131 | 3.43 | 0.85 | 0.07 | | | |
| | | | | | 1.10 | 1.91 | 225.73 |
| Normal | 109 | 3.21 | 0.89 | 0.09 | | | |
| 019 | | | | | | | |
| Successful | 131 | 2.40 | 1.09 | 0.10 | | | |
| | | | | | 1.09 | 3.12** | 233.21 |
| Normal | 109 | 1.97 | 1.05 | 0.10 | | | |
| 020 | | | | | | | |
| Successful | 131 | 2.28 | 0.97 | 0.09 | | | |
| | | | | | 1.09 | -1.58 | 226.17 |
| Normal | 109 | 2.49 | 1.02 | 0.10 | | | |
| 021 | | | | | | | |
| Successful | 131 | 3.60 | 0.86 | 0.08 | | | |
| | | | | | 2.58 | 5.92** | 173.82 |
| Normal | 109 | 2.70 | 1.38 | 0.13 | | | |
| 022 | | | | | | | |
| Successful | 131 | 2.11 | 1.06 | 0.09 | | | |
| | | | | | 1.07 | -1.74 | 227.19 |
| Normal | 109 | 2.36 | 1.09 | 0.11 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 023 | | | | | | | |
| Successful | 131 | 2.15 | 0.98 | 0.09 | | | |
| | | | | | 1.00 | 0.41 | 230.10 |
| Normal | 109 | 2.10 | 0.98 | 0.09 | | | |
| 024 | | | | | | | |
| Successful | 131 | 3.34 | 0.86 | 0.08 | | | |
| | | | | | 1.19 | -2.12* | 235.73 |
| Normal | 109 | 3.57 | 0.79 | 0.08 | | | |
| 025 | | | | | | | |
| Successful | 131 | 3.34 | 0.73 | 0.06 | | | |
| | | | | | 1.61 | 3.22** | 203.37 |
| Normal | 109 | 2.99 | 0.93 | 0.09 | | | |
| 026 | | | | | | | |
| Successful | 131 | 1.45 | 0.89 | 0.08 | | | |
| | | | | | 1.33 | -2.05* | 237.56 |
| Normal | 109 | 1.67 | 0.77 | 0.07 | | | |
| 027 | | | | | | | |
| Successful | 131 | 2.68 | 1.07 | 0.09 | | | |
| | | | | | 1.07 | 6.07** | 232.59 |
| Normal | 109 | 1.85 | 1.04 | 0.10 | | | |
| 028 | | | | | | | |
| Successful | 131 | 2.95 | 0.87 | 0.08 | | | |
| | | | | | 1.18 | -1.17 | 235.56 |
| Normal | 109 | 3.07 | 0.80 | 0.08 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | *F* Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 029 | | | | | | | |
| Successful | 131 | 2.94 | 0.89 | 0.08 | | | |
| | | | | | 1.71 | -4.57** | 236.37 |
| Normal | 109 | 3.40 | 0.68 | 0.07 | | | |
| 030 | | | | | | | |
| Successful | 131 | 2.31 | 0.98 | 0.09 | | | |
| | | | | | 1.27 | -1.76 | 237.00 |
| Normal | 109 | 2.52 | 0.87 | 0.08 | | | |
| 031 | | | | | | | |
| Successful | 131 | 3.57 | 0.63 | 0.06 | | | |
| | | | | | 1.93 | 3.04** | 191.75 |
| Normal | 109 | 3.27 | 0.88 | 0.08 | | | |
| 032 | | | | | | | |
| Successful | 131 | 1.72 | 0.91 | 0.08 | | | |
| | | | | | 1.07 | -0.75 | 227.04 |
| Normal | 109 | 1.81 | 0.94 | 0.09 | | | |
| 033 | | | | | | | |
| Successful | 131 | 2.84 | 0.72 | 0.06 | | | |
| | | | | | 1.35 | 5.53** | 214.56 |
| Normal | 109 | 2.28 | 0.84 | 0.08 | | | |
| 034 | | | | | | | |
| Successful | 131 | 2.89 | 0.78 | 0.07 | | | |
| | | | | | 1.14 | 2.76** | 224.25 |
| Normal | 109 | 2.61 | 0.83 | 0.08 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 035 | | | | | | | |
| Successful | 131 | 2.69 | 0.78 | 0.07 | | | |
| | | | | | 1.46 | 1.27 | 209.49 |
| Normal | 109 | 2.55 | 0.95 | 0.09 | | | |
| 036 | | | | | | | |
| Successful | 131 | 2.13 | 1.09 | 0.10 | | | |
| | | | | | 1.13 | 2.42* | 234.47 |
| Normal | 109 | 1.80 | 1.03 | 0.10 | | | |
| 037 | | | | | | | |
| Successful | 131 | 3.32 | 1.06 | 0.09 | | | |
| | | | | | 1.20 | -0.35 | 235.96 |
| Normal | 109 | 3.37 | 0.97 | 0.09 | | | |
| 038 | | | | | | | |
| Successful | 131 | 1.68 | 0.82 | 0.07 | | | |
| | | | | | 1.02 | -2.26* | 231.05 |
| Normal | 109 | 1.92 | 0.81 | 0.08 | | | |
| 039 | | | | | | | |
| Successful | 131 | 3.57 | 0.72 | 0.06 | | | |
| | | | | | 1.28 | 1.49 | 217.47 |
| Normal | 109 | 3.42 | 0.82 | 0.08 | | | |
| 040 | | | | | | | |
| Successful | 131 | 3.08 | 0.71 | 0.06 | | | |
| | | | | | 1.05 | 1.68 | 228.20 |
| Normal | 109 | 2.93 | 0.72 | 0.07 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 041 | | | | | | | |
| Successful | 131 | 3.04 | 0.68 | 0.06 | | | |
| | | | | | 1.31 | 2.60** | 216.31 |
| Normal | 109 | 2.79 | 0.78 | 0.08 | | | |
| 042 | | | | | | | |
| Successful | 131 | 2.76 | 0.80 | 0.07 | | | |
| | | | | | 1.02 | 0.19 | 229.36 |
| Normal | 109 | 2.74 | 0.81 | 0.08 | | | |
| 043 | | | | | | | |
| Successful | 131 | 3.22 | 0.67 | 0.06 | | | |
| | | | | | 1.31 | 2.54* | 216.08 |
| Normal | 109 | 2.98 | 0.77 | 0.07 | | | |
| 044 | | | | | | | |
| Successful | 131 | 3.66 | 0.51 | 0.04 | | | |
| | | | | | 1.09 | -0.37 | 233.21 |
| Normal | 109 | 3.69 | 0.49 | 0.05 | | | |
| 045 | | | | | | | |
| Successful | 131 | 2.45 | 0.86 | 0.08 | | | |
| | | | | | 1.14 | 3.10** | 224.17 |
| Normal | 109 | 2.09 | 0.92 | 0.09 | | | |
| 046 | | | | | | | |
| Successful | 131 | 3.67 | 0.53 | 0.05 | | | |
| | | | | | 1.42 | 3.86** | 211.27 |
| Normal | 109 | 3.38 | 0.64 | 0.06 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 047 | | | | | | | |
| Successful | 131 | 1.28 | 0.52 | 0.05 | | | |
| | | | | | 2.56 | -4.46** | 174.38 |
| Normal | 109 | 1.69 | 0.82 | 0.08 | | | |
| 048 | | | | | | | |
| Successful | 131 | 2.37 | 0.81 | 0.07 | | | |
| | | | | | 1.21 | -0.92 | 220.66 |
| Normal | 109 | 2.47 | 0.89 | 0.09 | | | |
| 049 | | | | | | | |
| Successful | 131 | 2.18 | 0.87 | 0.08 | | | |
| | | | | | 1.32 | -5.87** | 237.48 |
| Normal | 109 | 2.80 | 0.76 | 0.07 | | | |
| 050 | | | | | | | |
| Successful | 131 | 1.67 | 0.75 | 0.07 | | | |
| | | | | | 1.36 | -1.10 | 214.17 |
| Normal | 109 | 1.79 | 0.87 | 0.08 | | | |
| 051 | | | | | | | |
| Successful | 131 | 3.04 | 0.74 | 0.06 | | | |
| | | | | | 1.20 | 4.57** | 221.31 |
| Normal | 109 | 2.58 | 0.81 | 0.08 | | | |
| 052 | | | | | | | |
| Successful | 131 | 1.37 | 0.57 | 0.05 | | | |
| | | | | | 2.15 | -7.09** | 184.70 |
| Normal | 109 | 2.04 | 0.84 | 0.08 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 053 | | | | | | | |
| Successful | 131 | 2.91 | 0.83 | 0.07 | | | |
| | | | | | 1.00 | -0.34 | 230.24 |
| Normal | 109 | 2.95 | 0.83 | 0.08 | | | |
| 054 | | | | | | | |
| Successful | 131 | 3.25 | 0.65 | 0.06 | | | |
| | | | | | 1.14 | 3.10** | 234.55 |
| Normal | 109 | 3.00 | 0.61 | 0.06 | | | |
| 055 | | | | | | | |
| Successful | 131 | 2.72 | 0.95 | 0.08 | | | |
| | | | | | 1.26 | 1.37 | 236.87 |
| Normal | 109 | 2.56 | 0.84 | 0.08 | | | |
| 056 | | | | | | | |
| Successful | 131 | 3.52 | 0.65 | 0.06 | | | |
| | | | | | 1.03 | 1.04 | 228.95 |
| Normal | 109 | 3.43 | 0.66 | 0.06 | | | |
| 057 | | | | | | | |
| Successful | 131 | 3.68 | 0.52 | 0.05 | | | |
| | | | | | 1.64 | 1.78 | 202.14 |
| Normal | 109 | 3.54 | 0.66 | 0.06 | | | |
| 058 | | | | | | | |
| Successful | 131 | 1.44 | 0.70 | 0.06 | | | |
| | | | | | 1.78 | -4.28** | 196.86 |
| Normal | 109 | 1.91 | 0.94 | 0.09 | | | |

Table 15--Continued

| Item | Number of Cases | Mean | Standard Deviation | Standard Error | F Value | T Value | Degrees of Freedom |
|---|---|---|---|---|---|---|---|
| 059 | | | | | | | |
| Successful | 131 | 1.73 | 0.77 | 0.07 | | | |
| | | | | | 1.11 | 0.09 | 225.39 |
| Normal | 109 | 1.72 | 0.81 | 0.08 | | | |
| 060 | | | | | | | |
| Successful | 131 | 3.17 | 0.56 | 0.05 | | | |
| | | | | | 1.76 | 1.64 | 197.59 |
| Normal | 109 | 3.03 | 0.74 | 0.07 | | | |
| 061 | | | | | | | |
| Successful | 131 | 3.27 | 0.54 | 0.05 | | | |
| | | | | | 1.27 | 1.21 | 217.92 |
| Normal | 109 | 3.18 | 0.61 | 0.06 | | | |
| 062 | | | | | | | |
| Successful | 131 | 2.61 | 0.83 | 0.07 | | | |
| | | | | | 1.08 | 4.14** | 226.50 |
| Normal | 109 | 2.16 | 0.86 | 0.08 | | | |
| 063 | | | | | | | |
| Successful | 131 | 3.07 | 0.69 | 0.06 | | | |
| | | | | | 1.31 | 2.24* | 237.45 |
| Normal | 109 | 2.88 | 0.60 | 0.06 | | | |
| 064 | | | | | | | |
| Successful | 131 | 2.71 | 0.96 | 0.08 | | | |
| | | | | | 1.01 | 0.32 | 230.58 |
| Normal | 109 | 2.68 | 0.94 | 0.09 | | | |

# APPENDIX F

## DISTRIBUTION OF QUESTIONNAIRE ITEMS

## ACCORDING TO VARIABLES MEASURED

| Eating Habits | Food Preparation | Food Purchasing |
|---|---|---|
| 1 | 9 | 15 |
| 2 | 10 | 16 |
| 3 | 11 | 18 |
| 4 | 12 | 19 |
| 5 | 13 | 20 |
| 6 | 14 | 21 |
| 7 | 17 | 22 |
| 8 | 23 | 25 |
| | 24 | 30-60 |
| | 26 | |
| | 27 | |
| | 28 | |
| | 29 | |