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A COMPARISON OF VARIOUS
WEIGHT REDUCTION APPROACHES WITH
OVERWEIGHT UNIVERSITY FEMALE STUDENTS

by
David G. Waite

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Doctor of Education

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David G. Waite

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CHAPTER I

THE PROBLEM

Introduction

Educational leadership includes the necessity of moving into areas where needs of students are not currently being met and pioneering in the development of new programs to meet these needs.

Educational services are provided for practically all types of mentally, physically or emotionally handicapping conditions. New programs have recently been established to serve disadvantaged and other minority groups. Yet, in the movement for more humane educational programs geared to serve the needs of all students, obese students in our public and private schools, colleges and universities have been largely overlooked.

Obesity is a very serious national health problem. Sanders (1964) stated that the Commission on Chronic Illnesses in the United States ranked it as first in a list of 25 chronic diseases with an incidence of 128.9 per thousand. Rasmussen (1968) reported on studies by Williams which showed that nearly 50,000,000 persons, one out of four in the population, are above the ideal weight for their body structure. Maddox (1964) pointed out that ten million teenagers are overweight and that from fifteen to twenty percent of all adolescents are so overweight that they can be classified as genuine medical problems.

Concern with the problem of being overweight is a part of the American culture. Wyden (1965), for example, has reported on a large scale national market research poll in which 9.5 million Americans stated they were on diets, another 16.4 million were watching their weight to keep from gaining, and 26.1 million expressed concern about their present excess weight.

In attempting to control weight, attention generally has centered on dieting. In recent years increasing consideration has also been given to the effect of individual and group motivation and reinforcement as procedures in helping the obese person. National weight reduction groups and classes such as TOPS (Take Off Pounds Sensibly) and Weight Watchers have developed over the past 12 years. Yet, as Wollersheim (1968) has stated, no researched, controlled studies have examined the effect of individual and group motivational factors, when combined with a specific dietary plan.

Statement of the Problem

The concern of this research was to study a program of weight reduction based on a balanced, nutritious, dietary food plan and student motivation adapted to a university, female, physical education class setting. The major purpose of this study was to compare the effectiveness of the total weight reduction program with use of its component parts as methods devised to help obese, female students at Western Michigan University. Effectiveness of the programs was measured in terms of both weight loss

and improvement in self-concept measures. The Waite Dietary Food Plan, which is presented along with related materials in Appendix A, was developed by the writer to provide a common plan for dieting to be followed by the three experimental groups of volunteer subjects. Questions with which the study was concerned are:

1. Is a total weight reduction program necessary in effecting weight loss or will an abbreviated version, using one or more component parts of the program, prove just as beneficial?
2. Will the abbreviated versions of the weight reduction program prove to be as effective in the improvement of self-concept measures as the total program?
3. What degree of correlation will be found between weight loss and improvement in self-concept?

In relation to these questions, the following hypotheses, stated in null form, were developed:

- Ho(1): There will be no significant difference between groups in average weight loss during the 12-week period of the study.
- Ho(2): There will be no significant difference between groups in self-concept change during the 12-week period of the study.
- Ho(3): There will be no correlation among all subjects on degree of weight loss and self-concept change during the 12-week period of the study.

Definition of Terms

The following terms were used throughout the study:

Obesity

Obesity was defined to include students 12 or more pounds above the height-weight-age guidelines presented in Appendix A

which were developed for use with the research.

Average Weight Loss

Average weight loss was defined as the total number of pounds lost in each group during the 12-week period of the research divided by the total number of participants in each group section.

Self-Concept Change

Self-concept change was defined as average group change between the pre- and posttest measures on the Acceptance of Self scores of the Bills' (1951) Index of Adjustment and Values, (IAV), Adult Form. The Bills' test is presented in Appendix B.

Groups

Groups used in this study were taken from a total of seventy-four overweight female students all of whom were enrolled in Women's Physical Education classes. Groups 1, 2 and 3, the experimental groups, had the same physical education instructor. All members had volunteered to lose weight through an announced new weight control program incorporated as part of new physical education classes. Group 4, the control group, consisted of non-volunteer overweight students.

The four groups of students were further classified by the degree of overweight within groups:

Weight Group A	12 - 22 pounds overweight
Weight Group B	23 - 42 pounds overweight
Weight Group C	43 or more pounds overweight

All four groups received pre- and posttest administrations of the Bills' (1951) Index of Adjustment and Values.

Significance of the Study

The author considers obesity a significant area for investigation as an educational problem. Much of education has dealt with matters external to the personal needs of the student. Frequently the cognitive domain and intellectual attainment have been given greater educational significance than has the individual functioning or mental and physical health of the student.

Rasmussen (1968) pointed out in her historical review of obesity that until very recent times concern for the very overweight person has been principally in terms of the disfiguring aspects of the problem. Taller (1961) referred to an increasing number of the modern researchers and writers who have reported on the serious threat obesity has posed to the physical health and emotional well-being of persons. Heald (1965) concurred that adolescent obesity is a significant clinical problem. He further showed that adults with a history of juvenile onset obesity tend to be more severely obese and more resistant to treatment. Obesity has thus become a problem of more personal concern to the individual as well as a problem needing attention and treatment for persons during their school years.

The above studies tend also to confirm that the social and emotional problems related to obesity are accompanied by a depressing effect on the concept of self held by the student. Perkins (1965) found that there is a significant relationship between a low measure

of self-concept and underachievement. Rasmussen (1968) found that overweight students have poorer self-concepts than do students of normal weight. In a 10-year study of scholastic performance covering 134 boys, academic performance was notably less in boys classified as obese (Hopwood and VanIden, 1965). Thus a concern for the effect on academic achievement provides additional considerations for developing program approaches to help overweight students.

Because the self-concept of overweight students is affected adversely, there is a decided need to include a workable program in the curriculum planning of our educational institutions. The problems of the overweight person traditionally have been treated by educators from a cognitive point of view. The subject of obesity has been covered in health or home economic classes in factual, descriptive terms. The assumption has been that providing cognitive knowledge by itself was a sufficient method for educators in dealing with the needs of overweight students.

The objective of this research was to examine the component parts of a weight control program to determine the contribution each part made toward an effective program. If, for example, students desiring to lose weight, could effectively diet on their own, given a diet plan to follow, then a more comprehensive approach might not be deemed necessary. If, however, the additional component factors of weekly weigh-ins and group class discussions added measurably to the students' success at weight loss or self-concept change, then clearer decisions could be made as to which component parts should be included in developing educational programs for

overweight students.

Wollersheim (1968) pointed out that reviews of studies dealing with obesity indicate that rarely has research treatment been directed specifically at changing eating habits. A unique feature of this study was that each group of students was instructed to follow the same dietary plan. For this purpose a complete dietary plan was developed by the writer (see Appendix A). Self-concept change and weight change were thus measured in relationship to efforts made in attempting to follow the same planned approach at controlled eating. The dietary plan became a control factor for three of the groups. Thus the success of dieting on one's own versus success using two different group motivational approaches with volunteer dieters could be compared. This study, as an exploratory investigation, attempted to provide practical, useful knowledge as a basis for possible future development of an educational program for overweight students.

Overview

Chapter 1 has included an introduction, a statement of the problem, the null hypotheses, definition of terms, a scope of the study, a discussion of the educational significance of the study and an overview.

Chapter 2 contains a review of the literature. It includes an historical view of obesity, obesity as an educational problem, psychological characteristics of the overweight person, self-concept theory and research as related to obesity, and a review of treatment

programs related to helping obese subjects.

In Chapter 3 the research problem is reviewed. The design of the research is presented including the selection of the sample group, the procedures followed in developing and carrying out the research study, and the instrumentation used in the measurement of results.

In Chapter 4 research findings are presented and discussed.

In Chapter 5 a summary of the study is presented. Conclusions are described, and a discussion of immediate implications for further research as well as present application are provided.

CHAPTER II

REVIEW OF LITERATURE

In this chapter the specific findings of other researchers who have studied obesity are reviewed. In cases where the research of others is most closely related to the present study an in-depth review of both weaknesses and strengths is provided. The influence of others on model design of this study will be described.

An historical review of obesity is presented in the first section. Several pages are devoted to describing research findings which have a bearing on the present study, but which are not directly related to the specific research. Obesity, as an educational problem, is covered in the second section. In the third section psychological characteristics related to obesity are reviewed. In the fourth section a review of self-concept theories and research and their application and relationships to the problems of the overweight person is presented. Treatment approaches used with overweight subjects and their relevance to the present study are described in the fifth section. A discussion section at the end of the chapter brings together in summary form what has been presented.

An Historical View of Obesity

Obesity has been the concern of people down through the ages. As Rasmussen (1968) reported, in early history obesity was considered to be a mark of beauty among certain people. Gradually over the past

two thousand years it came to be recognized as a hazard to the health and well being of individuals so afflicted. It was Hippocrates, the father of medicine, as Rasmussen's study pointed out, who recognized that obese individuals are more likely to die suddenly than those who are thin. Galen, in the second century, also noticed that obesity is detrimental to the life process (Pelner, 1946). As late as 1882 a clinician named Ebstein divided obese persons into three groupings: the enviable, the comical and the pitiable. In today's society, obesity is no longer envied. Overweight persons are less accepted and even discriminated against in many situations.

Incidence of obesity

Bruch (1939, 1940a, 1940b, 1941) pointed out that for the past half century obesity has customarily been equated with overweight in relation to an "average" figure for height, age and sex. Since, in our Western society, weight commonly increases with age, the weight of the young adult person has been considered as "ideal."

Life insurance companies have provided the most comprehensive national statistical studies on the overweight person. The data from the Build and Blood Pressure Study developed by the Society of Actuaries (1959) covered the experiences of nearly 5,000,000 people insured by 26 large life insurance companies during the period 1935 through 1953. In Table 1 the average weights for these persons according to heights and ages are presented. As

figures are based on persons wearing shoes, a barefooted man should add one inch to his height, a woman two inches, before an accurate interpretation can be made.

The Build and Blood Pressure Study has also provided data on "best" or "desirable" weight associated with lowest mortality as shown in Table 2. One finding has shown that a trim person at age 25 should maintain this same weight with advancing years in order to stay within the lowest mortality figures. The average person, however, gains steadily with advancing age. Thus obesity as a health problem increases with each age level. To cite from the Statistical Bulletin, Metropolitan Life Insurance Company (1960):

The figures show that at age 30-39, about one half the men are at least 10 percent above their "best" weight and that one fourth exceed the optimum by at least 20 percent. The proportions increase with advance in age, and reach a maximum at ages 50-59, where more than 3 out of every 5 men are at least 10 percent above the "best" weight and about 1 out of 3 are at least 20 percent above that weight. For women, the proportion 10 percent or more above "best" weight is appreciably less than that for males under age 40, about the same as for men at 40-49 years, and greater than for men at ages 50 and older (p. 6).

The comparison of Table 1 and Table 2 figures provided in Table 3 the percentages of persons by age groups varying 10 percent or more above their "best" weights. These figures show that at age 20-29, 1 woman in 3 is 10 percent or more above her "best" weight. By age group 50-59, 2 of every 3 are 10 percent or more above their "best" weight and nearly one half (46 percent) are 20 percent or more above their "best" weight.

TABLE 1

AVERAGE WEIGHTS FOR MEN AND WOMEN
ACCORDING TO HEIGHT AND AGE

Weight in Pounds (in indoor clothing)						
Height (in shoes)*	Ages 20-24	Ages 25-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60-69
Men						
5' 3"	132	138	141	144	145	142
4"	136	141	145	148	149	146
5"	139	144	149	152	153	150
6"	142	148	153	156	157	154
7"	145	151	157	161	162	159
8"	149	155	161	165	166	163
9"	153	159	165	169	170	168
10"	157	163	170	174	175	173
11"	161	167	174	178	180	178
6' 0"	166	172	179	183	185	183
1"	170	177	183	187	189	188
2"	174	182	188	192	194	193
3"	178	186	193	197	199	198
Women						
4' 11"	105	110	117	124	127	129
5' 0"	108	113	120	127	130	131
1"	112	116	123	130	133	134
2"	115	119	126	133	136	137
3"	118	122	129	136	140	141
4"	121	125	132	140	144	145
5"	125	129	135	143	148	149
6"	129	133	139	147	152	153
7"	132	136	142	151	156	157
8"	136	140	146	155	160	161
9"	140	144	150	159	164	165
10"	144	148	154	164	169	170

*1-inch heels for men and 2-inch heels for women.

TABLE 2
DESIRABLE WEIGHTS FOR MEN AND WOMEN
ACCORDING TO HEIGHT AND FRAME AT AGES 25 AND OVER

Weight in Pounds (indoor clothing)			
Height (in shoes)*	Small Frame	Medium Frame	Large Frame
Men			
5' 3"	115-123	121-133	129-144
4"	118-126	124-136	132-148
5"	121-129	127-139	135-152
6"	124-133	130-143	138-156
7"	128-137	134-147	142-161
8"	132-141	138-152	147-166
9"	136-145	142-156	151-170
10"	140-150	146-160	155-174
11"	144-154	150-165	159-179
6' 0"	148-158	154-170	164-184
1"	152-162	158-175	168-189
2"	156-167	162-180	173-194
3"	160-171	167-185	178-199
Women			
4' 11"	94-101	98-110	106-122
5' 0"	96-104	101-113	109-125
1"	99-107	104-116	112-128
2"	102-110	107-119	115-131
3"	105-113	110-122	118-134
4"	108-116	113-126	121-138
5"	111-119	116-130	125-142
6"	114-123	120-135	129-146
7"	118-127	124-139	133-150
8"	122-131	128-143	137-154
9"	126-135	132-147	141-158
10"	130-140	136-151	145-163

*1-inch heels for men and 2-inch heels for women

TABLE 3

FREQUENCY OF OVERWEIGHT AND UNDERWEIGHT

Proportion of Insured Lives with Weights Deviating
Specified Degree Above and Below "Best" Weight

Percent Deviating from "Best" Weight								
Men				Women				
Age (Years)	Above "Best"			Below "Best"	Above "Best"			Below "Best"
	10% or More	10-19%	20% or More	10% or More	10% or More	10-19%	20% or More	10% or More
20-29	31	19	12	13	23	11	12	22
30-39	53	28	25	6	41	16	25	13
40-49	60	28	32	4	59	19	40	6
50-59	63	29	34	4	67	21	46	4
60-69	57	28	29	5	68	23	45	4

As Seltzer and Mayer (1965) pointed out, there are limitations in predicting obesity from the preceding tables. For one thing, there is the question of how representative insurance data are for the general population of the United States.

The statistics also represent three categories of small, medium and large frame. Yet no objectively measurable criteria were ever

developed on which to base body frame size. Thus considerable difficulty has arisen in attempts to develop a common denominator of measurement. As Bruch (1957) has stated, it is doubtful whether present statistical concepts of "normal" or "ideal" weight are valid. Certainly they do not provide a clear basis from which to describe incidence or to project findings.

As a result of this problem in definition of terms, reports on incidence of obesity vary greatly. For example, recent government statistics stated that "from 23 to 68 percent of women in the United States are 10 percent or more above their ideal weight while, within the college population, the incidence of overweight women is estimated to range from 10 to 36 percent" (United States Department of Health, Education and Welfare, 1967). Read and Heald (1965) determined that approximately 11 percent of ninth grade boys and girls are characterized by either mild or marked obesity. Taller (1961) stated that 20 percent of all adults in the United States are obese to the point where their physical health and mental health are endangered. Williams (1954) reported that in excess of 25 percent of our entire population is above the ideal weight for their body size. Finally, Mayer (1969), who, as the White House's Advisor on Nutrition has been concerned with national statistics on obesity, reported that approximately 20 percent of students graduating from high school are overweight as are between one third and one half of all adults.

Regardless of the varying interpretations of incidence, there is general agreement that the problem is a serious one. Grant (1951)

stated that obesity is America's greatest problem in preventative medicine. Bruch (1957) concurred that in the United States obesity is the number one health problem. The effect on shortening life is reported in the Metropolitan Life Insurance Company Statistical Bulletin (1960):

In the broad age range 15-69 years, the mortality for women 10 percent or more overweight was 18 percent in excess of that for standard risks; for women 20 percent or more overweight the excess was 25 percent. The excess mortality rose steadily with increase in degree of overweight - from 9 percent for women 10 percent overweight to 30 percent for those 30 percent overweight (p. 12).

These figures also point out that men who are 20 percent overweight have a 43 percent greater chance of developing heart disease, a 53 percent greater chance of having cerebral hemorrhages, and a 133 percent greater chance of having diabetes.

Obesity has become a major national health problem. With increasing study and research over the years, an increasing seriousness and public concern has developed as our knowledge of the consequences of the overweight condition become better understood.

Obesity as an Educational Problem

There has been considerable confusion as to whether obesity should be considered an educational problem, a health problem, a mental problem or a medical problem. There are aspects of treatment approaches used which relate to retraining of eating habits, reeducation of psychological conditioning and attitudinal patterns toward eating, nutritional education, physiological and medical concerns as well as considerations for behavior or attitudinal

modifications and group reinforcement and support. In addition, considerable current emphasis is being placed on studies relating physical fitness and exercise to obesity. Thus the problem has been compounded by a wide variety of approaches aimed at seeking appropriate and effective solutions.

During the past 15 years obesity has begun to receive serious attention from educational researchers. Maddox (1964) estimated that at least fifteen percent of all adolescents are so overweight that they can be classified as genuine medical problems. Mayer (1969), in a more conservative finding, stated that obesity included from 8 to 15 percent of the high school population, depending on the section of the country. These figures indicate that the incidence of obesity in our public schools is at least twice that of mental retardation, yet no widespread educational programs as yet exist. As a result, new ways of examining the concern beyond the medical and health aspects of the problem are now developing.

Curriculum guides traditionally have made no provision for the individualized, personal problems students have in attempting to follow a diet. The need for positive reinforcement and group support has been largely ignored. Health education is one curriculum area which has started to show new approaches to help the overweight student. As Doll (1970) pointed out:

The tendency to separate health education from physical education is continuing. National groups are now seeking to establish programs which include study of the difficult health problems of children and youth, e.g., venereal disease, smoking, teenage diets, and obesity. In general, study of health principles alone is proving inadequate; application

of principles to specific problems is seen to be important (p. 123).

There is a beginning movement to include obesity in the substance abuse problem category along with alcoholism and drug abuse and cigarette smoking. Neither public health nor mental health has assumed responsibility to date for the broad development of either educational or treatment approaches. The need today for programs in obesity is similar to that of drug abuse ten years ago.

Sociological factors

Sociological findings of researchers have provided important information relevant to educational planning for overweight students. Mayer (1969) stated that family influence is an important factor in the degree of obesity in children. When neither parent was overweight, only 9 percent of children became overweight. When one parent was overweight, 40 percent of children became obese too. When both parents were obese, the proportion of obese children was 80 percent.

In a related study conducted by Abraham and Nordsieck (1960) over a 20-year period, it was discovered that obesity in childhood tends to persist into adulthood. It was shown that 86 percent of extremely overweight boys became overweight as adults also, whereas only 42 percent of boys of average weight were overweight adults. Girls exhibited a similar trend. Eighty percent of the girls who were extremely overweight as youths became overweight adults, whereas only 18 percent of the girls of average weight became

overweight adults. These two studies showed the importance of working with the problem in the younger school years, and examining family approaches to educational and treatment programs.

Several studies have shown that the obese youth does not perform as well in school as does the student of normal weight. Hopwood and VanIden (1965), in a comprehensive study involving academic achievement and physical growth, showed that the obese students performed markedly lower in the academic area. The problem was compounded when factors of low income or deprivation were included. In a New York City study using United States Census figures, Moore, Stunkard and Shrole (1962) discovered that the incidence of obesity increased markedly among females reared in the lowest socioeconomic category. The same tendency existed among men but to a much lesser extent.

In the following section a further description of educational problems of obese persons is given in connection with a review of psychological characteristics.

Psychological Characteristics

The psychological characteristics of the overweight person have been studied by numerous researchers. Wollersheim (1968), in a comprehensive review of psychological theories on obesity, concluded that it was not possible to define psychological characteristics of obese persons which consistently distinguish them from non-obese persons. She further stated that the majority of theories have treated obesity as a symptom or result of some underlying "psychic

abnormality." These theories imply or directly contend that successful treatment rests on dealing with the presumed underlying causes. Hence some researchers have viewed obesity as resulting from an impulse neurosis or addiction (Fenichel, 1945), while others treated it as an obsessive-compulsive syndrome (Pronko, 1963), a psychosomatic disorder (Alexander and Flagg, 1965) or as a symptom of disturbed communications in the mother-child relationship (Bruch, 1963). Bruch concluded that the psychological problems of obese persons arise from a multitude of confusing and contradictory findings. She believes there is slowly developing a convergence of opinion that obesity is a symptom of a multiple interaction of various factors, only a few of which have thus far been clearly recognized.

There is a need to differentiate between the psychological factors that may lead to obesity and to the psychological suffering which results from it. Bruch (1957) has found that it is not possible to speak of the psychodynamics of one basic personality type or even to describe one single psychological feature as characteristic of all obese people. In some persons with many signs of disturbed behavior and adaptation, obesity is intrinsically interwoven with their whole development. With others, obesity becomes a development or reaction to some traumatic event. Her research further pointed out that obesity appears to serve as an equivalent or replacement for a depressive reaction for many persons who in other respects have the capacity for adequate functioning. Overeating may be viewed at times as substitute for a depression

period. At other times it may be a type of expression or reaction to the depressed state.

Monello and Mayer (1963) noted that the psychological responses of a group of obese adolescents were markedly similar to those of a minority group. They also observed that obese children tended to come from a non-unified family setting in which children expressed poor sociability patterns and fear over leaving the home setting.

Bruch (1939, 1940a, 1940b, 1941), in her studies with obese children, has found that they differ from children of normal weight as follows: greater timidity, greater unhappiness, greater emotional and social immaturity, more limited range of interests, fewer friends, and greater avoidance of physical activity. Her studies have shown that the mother of an obese child tends to be highly ambivalent toward the child. Food becomes a symbol of the love, security and satisfaction the child requires, and a way for the mother, according to this theory, to deny the rejection she cannot acknowledge. She replaces this rejection with food. The child tests his mother's love by demanding excessive food and the mother demonstrates her "love" by providing it. Bruch does not provide objective data on social behavior and personality from which she drew her conclusions. The conclusions were based largely on parents' reports which may be unreliable.

One significant finding of obesity research is that overweight persons had deficits in perception and conceptualization. These two important factors in the psychopathology of obese persons may

be related to the inability of obese persons to correctly identify hunger satiation. Obese persons have a "falsified awareness" of bodily needs. They have difficulty in drawing correct conceptual conclusions about sensations and impulses arising from within the organism, and differentiating them from those stimuli which are motivated by external factors (Bruch, 1961). This pattern of difficulty in conceptual skills is similar to that found in many cases of brain damage or learning disability. The activity is not performed in relation to a total conceptual goal, but becomes a reaction of compulsive or repetitive nature in and of itself.

Stunkard (1959) has attempted to differentiate various psychological responses of obese persons as they relate to eating patterns. He believes that three identifiable responses are an insatiable desire for unattainable love, a frustrated desire for sexual gratification, and a punishment reaction to forbidden impulses.

In various studies summarized by Schrachter (1969), he drew together the findings that the obese person satisfies hunger based on emotional tones. Thus loneliness, anger, restlessness or other emotional states can induce hunger in the overweight person.

Bruch (1961) believes that the obese child has characteristically been raised in a home setting in which there is confusion between intense emotional states and hunger. During childhood these children have not been taught to discriminate between hunger and such states as fear, anger and anxiety. Thus, states of arousal condition hunger patterns in the obese person. A preoccupation with food may appear as a helpless clinging to parents, or as an

expression of rejection of them (Sherif, 1960).

Wollersheim (1968) reported that in a detailed study of comparisons between overweight college women, the obese consistently differed from the non-obese in the reported incidence of eating more in response to both non-emotional and emotionally toned situations. Schrachter (1969) has shown that the obese do not label as "hunger" the same set of bodily symptoms as normal persons. Obese persons tended to eat based more on their emotional rather than physiological need. As Schrachter stated:

Eating behavior of the obese is relatively unrelated to any internal "gut" state but is, in large part, under external control: that is, eating behavior is initiated and terminated by stimuli external to the organism (p. 77).

In recent years psychologists have also attempted to isolate factors that may predict success or failure in dieting. Young (1964) found that the knowledge of the hazards of overweight in itself usually does not provide adequate incentive to lose weight. According to Young obese persons must have realistic personal reasons for wanting to lose weight, and also a clear plan of action with attainable goals. This should be combined with non-chastising therapeutic support.

Stoltz and Stoltz (1944), in their study of the reaction of 93 boys and 83 girls to their own obesity, showed simply that both groups were disturbed by their fatness. Certainly the review of psychological literature has shown an additional dimension to cause concern for better meeting the needs of the overweight person. In the next section a review of self-concept theory and research is presented. It will

prepare the reader for the use of self-concept as a measurement tool in this research study.

Self-Concept Theory and Research

The overweight person's self-concept has been the subject of considerable research effort. Borg (1964), a recent researcher in the field, has defined self-concept as follows:

The self-concept or phenomenal self as defined in contemporary psychology refers to the individual's perception of himself. That is, expressed in simple terms: the ideas, perceptions, and beliefs that form the image of himself that the individual has created. This picture that he has of himself may be highly realistic in the well adjusted individual, or it can be completely detached from reality as in the case of the psychotic who believes himself to be Napoleon. Regardless of the individual's self-concept, however, he tends to behave in a manner that he considers to be consistent with this concept (p. 233).

The difficulties of researchers who study self-concept has been reported by Brashier (1965). In his thorough review of literature he concluded that "there was little agreement among researchers on what was meant by self-concept or even self (p. 7)."

Rasmussen (1968) confirmed this lack of agreement among theorists, and further stated that self-concept as a measurement tool has had many obstacles in research application:

The difficulties encountered by those who study self-concept are recognized by many writers in the field (Frank & Heister, 1967; Kinkler & Myers, 1963; Milgram & Helper, 1961; Veldman & Worchel, 1961; and Wylie, 1961). Problems include theoretical shortcomings, flaws in research design, ease of falsification of answers by subjects, and lack of instruments with demonstrated reliability and validity. However, there are positive trends and those interested in self-referent constructs should face the crisis and do what is necessary to put their work on a more solid footing (p. 18).

The self-concept is considered by most contemporary personality theorists to be an important factor underlying the individual's behavior. It has been given important consideration and study by such theorists as Fromm (1939), Horney (1937), Lecky (1945), Rogers (1951), and Snygg and Combs (1949). One group, which included Rogers, Snygg and Combs, and Lecky, believes the self-concept to be the principal determiner of behavior.

Since 1940 problems related to self-concept have abounded in psychological and sociological research. Sherif, as reported in Sills (1968), analyzed the research trends in self-concept as follows:

In brief, the growing interest in self-concept reflects the search for interactive concepts particularly in motivation where empirical work has tended to be fragmentary. Studying motives separately has fallen short in providing an adequate account of human motivation. The self enters into the operation of human motives as a regulative factor. So, too, self enters into other psychological processes. Involvement of the self in these processes is reflected in the consistency of the person and its continuity from day to day. In fact, self involvement in particular aspects of the kaleidoscopic stimulus world is the basis for the experience of continuity in personal identity (p. 151).

Sherif stated that the most widely documented generalization among investigators in this field is that self-concept is a developmental formation. Self-concept is not construed by Sherif as the product of innate functioning, as are the individual's organic urges such as hunger and sex. These are subject to homeostatic regulation by the organism. Self-concept is the product of interaction from infancy onward with the person's physical and social environment. This interaction is associated

with novel and familiar sensations: pain, resistance, acceptance, rejection and gratification (Sherif, 1962).

Other researchers concur in the importance of interpersonal relationships in self-concept development. Lindesmith and Straus (1949) found self-concept formation to be dependent upon interaction with other persons who are members of a social and linguistic community. In analyzing the presentation of the self in a variety of social situations, Goffman (1956) determined that the person's basis of self-concept stability and growth is a collaborative manufacture involving social functioning and interpersonal supportive actions.

William James (1890) analyzed the concept of a person's identity in terms of a group of "selves." James theorized that components of the self formation are interrelated and that differing components may be mutually supportive or conflicting, depending on the situation. Sherif has described James' construct of self-concept as substituting the generic term "self" with the component "selves." The component "selves" are referred to as attitudes or self-attitudes which pertain to relatedness of self to objects and persons important to the person. Attitudes are defined as "the more or less lasting evaluative categories of the person." More transitory internal states are described in terms of "sets", "expectations" or "body urges" (Sherif, 1962).

James' subdivision of the self into differing "selves" within the person is consistent with current self-concept test and measurement approaches. The development of testing instruments

in the field has resulted in isolating and establishing several sub-categories of self-concept. This is described in Chapter III in the section on Instrumentation in connection with the Bills' (1951) Index of Adjustment and Values, (IAV), Adult Form, the self-concept test used with this study.

Many researchers have found that a person's concept of himself does not easily change. Borg (1964) viewed the individual's self-concept as something which the person maintains frequently at considerable cost to himself, but which may be under some pressure to change when his behavior is in conflict with social norms. Fitts (1965) stated that the individual's self-concept is directly related to his state of mental health. Persons who see themselves as undesirable or worthless tend to act that way. These researchers describe a person's concept of himself as the basis for his behavioral patterns.

Several investigators have been concerned with the relationship between self-concept and the concept a person has of his body. In studies conducted by Jersild (1957) and Murphy (1947), it was determined that a person's attitudes concerning his concept of himself will influence and are influenced by his view of his physical appearance and physical abilities. According to their findings a person's body characteristics, as perceived by the person, exert a central influence on the development of one's self-concept.

Brown (1958) found that one's body image is a significant factor in obesity. He concluded that in order for the obese person to lose weight and maintain weight loss the reducer must be helped

to achieve an accepted concept of self as "slender, safe and secure" (p. 457).

Self-concept theorists generally agree that body characteristics which are lowly valued by a person may be expected to undermine general self-regard whereas highly valued body characteristics tend to enhance self-regard (Rasmussen, 1968). She reported on a number of "body cathexis" studies which have indicated a pattern of findings showing that deviations of body characteristics from a person's "ideal body image" may lead to lowered self-esteem. Wylie (1961) pointed out, however, that there is need for controlled studies to directly explore and verify this relationship between self-concept and body image.

Blazer, in a study reported by Wollersheim (1968) involving 100 extremely obese subjects, concluded that a common characteristic of the overweight patient is that he no longer attempts to view himself in a positive way and is not able to relate in a meaningful way to others.

Perkins (1965) linked threats to the maintenance and enhancement of self as significant in determining behavior which leads to underachievement. Persons with repeated failure patterns in attempting a task may develop poorer self-images. This theory raises important research considerations in connection with weight control as a common experience of the overweight person is his repeated failure experience in dieting.

Rasmussen (1968) has shown that overweight students have poorer self-concepts than do students of normal weight. There remains,

however, disagreement as to the potential for improvement and change. Fitts (1965) believed there is considerable evidence that a person's concept of himself does change as a result of a significant experience such as psychotherapy. Congdon (1958), on the other hand, concluded that if change does occur, it is generally over a long period of time. In connection with obese subjects no conclusive research has appeared to test the relationship between weight loss and self-concept change.

Treatment Approaches

This section presents a review of research studies related to treatment approaches dealing with weight control. It includes a general overview of research trends and developments, a comparison of individual and group methods, and an analysis of relevant findings.

Reviews of studies dealing with treatment of obese subjects have consistently reported the limitations of both research design and methodology in this field. Wollersheim (1968) described the situation as follows:

Of the hundreds of papers published in this area, most do not give figures on the outcome of treatment and of those that do, few report them in such a way that results with individual patients can be identified. Such a situation makes it impossible to evaluate the results of treatment in the majority of studies. For example, many reports merely state that treatment was "successful" for a certain percentage of patients, but fail to state the operational criterion for "success." Some studies report rates of weight loss for groups of patients for whom the duration of treatment was unspecified while others report the percentage of weight loss without detailing the amount. Methods of selecting patients,

attrition rates during treatment, and degree of obesity are frequently not specified (Pp. 4-5).

Many weight control studies have not used control groups. Also noted is the fact that many reports of treatment approaches fail to give an adequate specification of the independent variables. Thus it becomes impossible to replicate the studies or to make definitive statements concerning treatment. In addition very little research effort has been made to analyze the stimuli controlling eating behavior.

Stunkard and McLaren-Hume (1959) published a comprehensive review of treatment results with overweight subjects covering a 30-year period. The major generalized conclusion from this review was that only 25 percent of subjects lost a significant amount of weight. They stated that the "results of treatment for obesity are remarkably similar and remarkably poor" (p. 79).

Investigators in the field of weight control have found attrition rates of subjects to be very high. In Stunkard's (1957) review he reported that from 20 to 80 percent of subjects beginning weight reduction programs abandoned them before completion. Wollersheim (1958) stated that the attrition rates for most groups are in excess of 50 percent of the number of beginning subjects. Kosofsky (1957), Kotkow (1953) and Grant (1951) confirmed these attrition figures.

Reports by investigators on treatment results in obesity are generally negative. Wollersheim (1968) stated that weight reduction programs have been discouraging for overweight individuals,

researchers and practitioners. Stunkard and McLaren-Hume (1959) noted that "rarely have physicians so readily surrendered a part of their domain to moralizing, indifference and despair" (p. 84). Psychotherapists and nutritionists share this same discouragement concerning the effectiveness of present treatment methods (Grant, 1951; Young, Berresford and Moore, 1957). Wollersheim (1968) concluded that "there has been not only a failure to establish the effectiveness of any treatment procedure, but suggestive hypotheses concerning the important domains and classes of variables relevant to therapy research are almost completely lacking due to the gross nature of the majority of the studies in this area" (p. 6).

Within the research limitations described, considerable effort has been made to discover workable procedures and programs to benefit the obese. One area of research interest has centered on attempts to determine factors which are predictive of success in weight control programs. Hoffman (1957), a medical doctor, attempted to rank factors necessary for effective treatment in doctor-patient relationships with overweight subjects. He determined that by far the most significant factor was personal contact with the patient at regular intervals. Other researchers, Ettinger and Walker (1966) and Truax & Carkhuff (1964), have stated the importance of supportive, warm relationships in effective treatment of these subjects.

In a study conducted by Shipman and Plesset (1963), 123 dieters were evaluated on a group of factors to determine which ones were predictive of success in losing weight. The predictors included

initial anxiety, depression, age, socioeconomic status, degree of obesity, marital status, race and referral source. The study revealed that by far the most significant predictor was the amount of weight lost between the first and second visits. Young (1964) also noted that individuals who are in the earliest stages of obesity have the best chance of successful dieting. In addition he found that the most successful dieters were those who had not previously undertaken weight reduction programs.

In a comparative one-year research study Harmon, Purhonen, and Rasmussen (1958) evaluated various approaches in attempting to help overweight adolescent high school girls. From this study it was concluded that group approaches worked better than individual counseling in helping students understand the reasons for overweight, and in motivating them to lose weight. The findings from this study can only be interpreted in broad, general terms as it lacked clear definition of terms, statistical comparisons, and randomization of groups.

Rasmussen (1968) found that individual counseling, as a single phase treatment, "involved a great deal of time and did not seem to produce results" (p. 26). Various studies have shown that the use of either individual or group psychotherapy as the sole treatment procedure for overweight persons has not resulted in long term weight loss. Wollersheim (1968) pointed out that studies of group counseling approaches, with no dietary control procedures, tend at best to provide an adjustment by group members to their obese situation. Holt and Winick (1961) concluded that group psychotherapy

can improve the general well being of obese persons even though their hypothesis that group therapy would produce weight loss was not supported. They reported that as treatment revealed how overeating and obesity were imbedded in a person's defense system, the goals of overweight persons were modified in the direction of weight maintenance rather than weight loss. Most investigators have not implied that the process of counseling and psychotherapy is not an important factor in weight control treatment. The conclusion is that its use needs to be supplemented with other types of help.

During the past twenty years the trend in weight control studies, clinical programs and treatment approaches has increasingly been moving from individual help to working with persons in group settings. During the first half of this century the primary source of help for the overweight person was from medical doctors. In most cases they were involved with obese patients on a one-to-one basis. Accounts of medical treatment of overweight persons (Hoffman, 1957; Pelner, 1946; Selling, 1945; Taller, 1961) indicate general agreement that weight reduction is one of the most difficult problems that doctors encounter.

In a study involving female students at Brigham Young University, Rasmussen (1968) compared medical treatment provided on an individual basis with an experimental group offered "action-commitment group therapy" (p. 79). The first group was comprised of students who went individually for a weekly medical visit and checkup at the University Medical Health Center. During a 12-week period, 13 of

the original 23 subjects dropped out. This represented an attrition rate of 56 percent. Of the 10 remaining, the average weight lost for the period was 3.9 pounds per person.

The second group received a group counseling approach in which members committed themselves to honesty, consistent group attendance and careful record keeping of food consumed. Of the original 39 participants, 8 dropped out. This represented an attrition rate of about 20 percent. The 31 persons who completed the 12-week program had an average loss of 8.13 pounds.

Rasmussen explained the relative success of her experimental group as follows:

The commitment to regular attendance and the warmth and concern of group members and therapists, coupled with the expectation that they accept personal responsibility and become active may have been a prime influence in effecting weight loss in the commitment-action group (p. 82).

Rasmussen's study has provided some important data which should be supported by additional research. This included the findings that attrition rates and results for obese students seeking individual medical help fall decidedly below those receiving one type of supportive group treatment. Her study also showed that a control group of overweight volunteer students, left on their own, tended to gain weight. During the 12-week period, the 31 subjects in the control group who were advised that they would not be included in any treatment group gained an average of 2.74 pounds per person.

Other research tends to confirm Rasmussen's conclusions that group commitment and decision making are important to success in

weight control. An older study conducted by Lewin (1953) dealt with an experiment to change eating habits. He compared a lecture method approach with the group decision process. Participants were asked to commit themselves to action and then make a subsequent report to the group. Only three percent of the women who had only heard the lecture changed certain food behaviors, whereas after group decision, 32 percent changed them.

Lewin and Grabbe (1945) found that it was easier to change the value structures and social practices of a small group working together than of a single individual. The amount of individual involvement and personal investment appeared to be greater in group decision making and was much more conducive to changing behavior of group members. The results of these two studies provide significant information for those who intend to work with individuals in a group situation.

In reviewing research, no studies were found which compared the effectiveness of subjects in differing treatment approaches in attempting to follow the same dietary plan. Thus the present study is unique in this respect.

The Heirick Weight Reduction Studies, among the most successful reported by Wollersheim (1968), did focus on changing eating patterns. Subjects were placed in groups of about 12. Weekly meetings were held with major emphasis on structured discussion. Weekly weigh-ins were included, and persons were provided with nutritional information.

There were some specific shortcomings to this study. It lacked

any systematic principles to help overweight persons limit over-eating. No control group was used. Reports of the study failed to describe clearly the specific details or the treatment methods used. In spite of these limitations, this study is one of very few which has followed subjects over a period of time. Of the 300 original participants, 249 were followed for one year. Of these 249 subjects, 40 percent lost 15 or more pounds during the course of the original 16 weeks of treatment. At the one year follow-up, 23 percent had at least maintained their 15 pound weight loss. There is considerable need for longitudinal studies in this field. Such data, if available, might significantly aid weight control research.

In recent years research interest in weight control has grown rapidly. Studies generally have shown many limitations and shortcomings. Regardless, with considerable effort some important new directions and findings have resulted.

Summary

In Chapter 2 it has been shown that obesity is a difficult problem to measure. Due to a lack of a common definition of terms, there is considerable variation on reports of incidence. Regardless, there is general agreement that the problem is a serious one.

Efforts to help obese persons have been attempted from a variety of fields. Obesity has been considered an educational problem, a health problem, a mental health problem and a medical

problem. During the last 15 years educational researchers have become increasingly concerned. Obese students score lower on measurements of self-concept than do students of normal weight. Also the overweight student performs lower in academic achievement than does his normal weight counterpart. Overweight students compose a large group of persons with social, emotional and health problems. If not corrected, the vast majority of obese students will become overweight adults.

The psychological characteristics of obese persons do not provide a specific type of personality profile. Overweight persons tend to express greater immaturity, suspiciousness and rigidity as well as avoidance of physical activity. They experience more unhappiness than persons of average weight. Many obese persons exhibit deficits in perception and conceptualization. Activities are not performed in relation to total conceptual goals, but may become compulsive or repetitive in and of themselves. Numerous psychological theorists believe that food has become a substitute for maternal love, security and satisfaction.

The self-concept of obese persons has been shown to be lower than that of normal weight persons. Research, although limited, indicates that a poor concept of one's body parts and poor self-concept are highly correlated. There is no common agreement as to the potential for self-concept improvement or change.

Treatment approaches in obesity generally have shown poor research design and methodology. Results of weight reduction studies and programs have been poor, and attrition rates have been

high. Yet, as the growing seriousness of the problem has become evident, considerable new research effort has been attempted.

Counseling, both individual and group, as a solitary treatment procedure, has produced limited results. Counseling, by itself, may help with personal adjustment but does not result in long-term weight loss. Research indicates a counseling approach needs to be supplemented with other types of treatment. One-to-one treatment procedures are giving way to group treatment. Studies point out that both weight loss and attrition rates improve when group procedures are used.

Few studies have combined a supportive group approach with efforts to retrain eating habits. No studies, like the present one, have used the same dietary plan as a control factor in comparing the effectiveness of differing treatment approaches in achieving either weight loss or self-concept change.

CHAPTER III

DESIGN AND METHODOLOGY

The design and methodology used in this study are reported below under six headings: (1) Review of the Problem, (2) The Sample, (3) The Treatment Groups, (4) Data, Instrumentation and Variables, (5) Procedures and (6) Analysis of Data.

Review of the Problem

This research was designed to study the relative effectiveness of using just abbreviated, adapted component parts of a weight control program as compared with the use of the total program. The study was adapted to a university, female physical education class setting. It was based on a balanced, nutritious, dietary food plan and student motivation. Effectiveness was measured in terms of both weight loss and improvement in self-concept measures.

The study involved a procedure which assigned subjects into four differing treatment groups. Three were experimental and the fourth, a control group. Subjects were further classified by a matching procedure into three sub-classifications within each treatment group based on differing degrees of overweight. There were, therefore, 12 distinct cells with which to cross-compare the two dependent variables. The model, as described, is shown in Table 4.

TABLE 4

DISTRIBUTION OF SUBJECTS BY DEGREE OF OVERWEIGHT
WITHIN TREATMENT AND CONTROL GROUPS

	Treatment Group I	Treatment Group II	Treatment Group III	Control Group IV	
Weight Group A (12-22 pounds overweight)	3	7	5	5	20
Weight Group B (23-42 pounds overweight)	5	12	10	6	33
Weight Group C (over 42 pounds overweight)	6	3	7	5	21
	14	22	22	16	74

The Sample

The 74 subjects for this study were selected from overweight, female undergraduate students at Western Michigan University who had physical education course requirements to meet. They were selected first from the estimated 1700 new freshmen and transfer students during registration. The balance came from other undergraduates registering during final registration proceedings for the fall of 1970.

Assignment into groups

The overweight subjects were divided into groups in the following manner. As the freshmen and transfer students arrived for orientation meetings, each received a copy of the letter describing the weight control program as shown in Appendix B. The letter explained that a new weight control program was available through enrollment in special physical education classes to qualified students. Students qualified by falling within three separate weight ranges. The ranges increased with each inch of height from a minimum height of four feet, ten inches to a maximum of six feet. The three separate weight categories were called Groups A, B and C. These categories corresponded to 12 to 22 pounds of excess weight for Group A, 23 to 42 pounds for Group B, and over 42 pounds for Group C. The height-weight chart from which the degree of overweight was computed is presented in Appendix A. It is described in the section under Data, Instrumentation and Variables.

The students were then referred to the Academic Counseling Program which provided help with class scheduling just prior to registration. The girls who qualified and requested to enroll in this program were assigned by the Academic Counseling Staff to one of the four research groups. Students were told only that the program involved following a well-balanced dietary plan and that physical education course credit would be offered. Neither the counselors nor the students knew that any difference in treatment between the groups was to occur.

In making assignments to groups, a matching procedure by degree of

overweight was employed. The scheduling was coordinated with registration so that a distribution of each weight group category was placed in each physical education group. In Appendix B an outline of the procedures followed by Academic Counselors and a schedule for placing students is presented. To assure proper placement, Class Control Cards, or "C" cards, were used. These reserved space in particular classes and were used to both limit and control enrollment. There were 25 "C" cards for each of Groups 1, 2 and 3. Group 4, the control group, was provided 28 "C" cards with seven for each class section. The student presented the "C" card as she registered. The undergraduate subjects selected from final registration followed the same procedures described except that a booth was set up in the registration area to advise students of the program and replaced the Academic Counselors in this function.

It was expected that with normal loss approximately 80 students, or 20 in each group, would remain from the 103 who initially were permitted enrollment. With final attrition due to schedule conflicts and changes, the number of subjects was further reduced to 74.

In this study the logistical problems caused by course registration conflicts and course changes by students made true randomization impossible. Thus an alternative control procedure was employed. This consisted of balancing the distribution of students by degree of overweight within the treatment groups. In addition, an effort was made to balance the number of freshman, sophomore, junior and senior students as exactly as possible. The distribution of these subjects by treatment

groups was shown in Table 4. In Table 5 the subjects are presented by their year in college and weight group.

TABLE 5
DISTRIBUTION OF SUBJECTS BY YEAR IN
COLLEGE AND DEGREE OF OVERWEIGHT

	Freshmen	Sophomores	Juniors	Seniors
Group A (12-22 pounds overweight)	4	9	10	5
Group B (23-42 pounds overweight)	5	12	11	6
Group C (over 42 pounds overweight)	6	3	8	5

Siegel (1956) stated that a parametric statistical test is a test whose model specifies conditions about the parameters of the population from which the sample was drawn. In the use of parametric statistics randomization of the sample is considered an important assumption. There is, however, no known nonparametric test which provides a two-way analysis of variance measurement. Thus a representative sample was selected. This, plus the adjustments which were made to offset true randomization, provided the best possible alternative.

The Treatment Groups

In this section the procedures in organizing the three experimental group treatments and the control group are described. The similarities and differences between groups are presented.

This study was adapted to the Physical Education class setting through cooperation of the Women's Physical Education Department at Western Michigan University. At the time of this study, Physical Education was required of all students. Even in cases where physically limiting conditions existed, adapted programs were made available. Two semester hours of credit were required of all students for graduation. The research classes established for this study offered one semester hour of credit and met twice a week. The three experimental Physical Education classes had the same instructor and contained only the overweight subjects. The control group was composed of subjects enrolled as a part of four additional sections of Beginning Swimming Physical Education classes.

A brief description of differences and similarities between groups follows. The groups and group procedures mentioned are described in more detail in the Data, Instrumentation and Variables section and the Procedures section.

Group 1 - Physical Education 128 - General Physical Education. Fourteen overweight students were assigned as part of this Physical Education class. All subjects took the adult form of Bills' Index of Adjustment and Values, the self-concept measure, at the beginning of the semester. Each had her height measured and weight taken. At the second class meeting the dietary food plan, as shown in Appendix A, was explained in detail, and subjects were

encouraged to follow it on their own. They were told they would be called together at the end of the semester to again be weighed. At this time they were also given a posttest of the Bills' Instrument.

Group 2 - Physical Education 128 - General Physical Education. The 22 overweight students in this group received identical treatment to Group 1 except, in addition, the class members were weighed in individually each week. They were given a goal weight as well as a weight record booklet to keep a record of their progress. Each week their weight was recorded for them and change was indicated and reported on a graph as shown in the Record Booklet in Appendix A.

Group 3 - Physical Education 128 - General Physical Education. The 22 overweight subjects were given the full adapted weight reduction program which replaced one of their two weekly, one-hour, physical education class meetings. This consisted of the same procedures as in the second group plus a weekly lecture which included a motivational talk on psychological or dietary problems related to obesity. This was followed by a brief discussion period, and reading of the three or four most successful members' weight losses both for the week and for the total period to date.

Group 4 - Physical Education III - Beginning Swimming. The 16 overweight subjects were divided among four different class sections. Four of the subjects had been purposely assigned to these pre-arranged classes. They were informed via a letter (see Appendix B) that they were not to be included in the present study. Twelve were obese students who had neither volunteered nor been approached relative to this research project. Through arrangement with their teachers all class members of each section, control subjects and other students, were given the same pre- and posttest administrations of the self-concept test as were the experimental groups. Similarly all students had their height measured and were weighed at the beginning of the semester and again at the end. Control group subjects were told, along with their classmates, that the weighing and testing procedures were part of the class process.

The control group subjects differed from all three of the experimental groups in two important ways. First, most of the subjects

were non-volunteers. The results of the four who had volunteered and been denied a program were carefully compared with the truly non-volunteer subjects. Second, the control group subjects received no dietary plan and materials to follow as did the other groups.

The Waite Dietary Plan used with Treatment Groups 1, 2 and 3 is described in the Procedures section and is presented in Appendix A. Appendix B includes the Bills' Index of Adjustment and Values, the self-concept test used in this study. The test is discussed in detail in the section on Data, Instrumentation and Variables and also in the Procedures section.

Data, Instrumentation and Variables

This section includes a description of the independent and dependent variables, the methods used in securing and recording weight data, and the instrumentation used in self-concept measurement.

Variables

The design of this study involved the use of two independent variables and two dependent variables. The independent variables are pictured in Table 4. The first independent variable was the differing treatments offered in the three experimental groups and the control group. The second independent variable was based on the degree of overweight classifications of subjects. Group A was composed of subjects 12 to 22 pounds overweight, Group B included those 23 to 42 pounds overweight and Group C were subjects more than 42 pounds overweight. The two dependent variables in this

study were weight loss and self-concept change. In the following sections of this chapter these variables are described.

Data

In this section the methods and procedures for collecting and recording research data are described. In Appendix A the forms which were used are presented.

Height and weight information for the research groups was kept on the Student Information Cards on which space was also provided for personal information and self-concept scores. The weight loss data for students in Treatment Groups 2 and 3, who were weighed weekly, was also recorded in the Weight Record Booklets provided them. This included both weekly and cumulative weight change as well as a graphed presentation of results. A goal weight was provided for each student. It was computed from an average figure of desirable weights (Table 2), with allowance for shoes being removed, and is presented in chart form in Appendix A. It was usually in a range of 5 to 12 pounds above final weight objectives, and included an adjustment for persons under 25 years of age.

The degree by which subjects were overweight was computed through a series of steps. Table 6 provides an abbreviated version of the "best" weight for women age 25 and over as prepared by Metropolitan Life Insurance Company (1960).

TABLE 6

DESIRABLE OR "BEST" WEIGHTS FOR WOMEN
ACCORDING TO FRAME AT AGES 25 AND OVER

Height In Shoes*	Small Frame	Medium Frame	Large Frame
5' 0"	96-104	101-113	109-125
2"	102-110	107-119	115-131
4"	108-116	113-126	121-138
6"	114-123	120-135	129-146
8"	122-131	128-143	137-154
10"	130-140	136-151	145-163
6' 0"	138-148	144-159	153-173

*Allow 2 inches for shoes

Computed by Metropolitan Life Insurance Company

In considering the weight of a woman five feet, six inches tall from this table, the figures for five feet, eight inches were used. The two inches added allowed for the average 2-inch height of women's shoes. In next examining the range of weight for this height from the lowest figure for a small frame, 122 pounds, to the highest figure for a large frame, 154 pounds, the difference is 32 pounds. The mid-point in this range, or 16 pounds, when adapted to these figures, provides a weight of 138 pounds. This weight was the weight used in determining the degree of overweight as well as the weight group classifications A, B and C for subjects in this study. The computed ranges for each inch of height are presented in Appendix B.

As described in Chapter II, there is no ideal or exact

measurement of normal weight. These devised figures agreed most closely with generally available medical and health sources. The statistics of Metropolitan Life Insurance Company are the most accepted criterion measure used in this field.

Instrumentation

In studying the numerous testing instruments available for measuring self-concept, one test appeared to be the most useful. This was the Bills' (1951) Index of Adjustment and Values, (IAV), Adult Form. The IAV was designed to measure four variables:

(1) Concept of Self, (2) Acceptance of Self, (3) Ideal Self and (4) Discrepancy Score. The latter is obtained by subtracting Concept of Self from Ideal Self. The test may be administered individually or in groups.

The initial form of this test, the Adult Form for high school seniors, college and older, which this study used, was first developed in 1951. A considerable body of research and evaluation has been carried out on it since that time. Borg (1964) found the Bills' Instrument to be both the most valid as well as reliable self-concept measurement for testing elementary and secondary level students. Wylie (1961), in a thorough evaluation of all self-concept measuring devices, stated that much more information is available on the norms, reliability, and validity of this instrument than any other measure of self-concept that she has reviewed. Statistically significant concurrent validity correlations between the IAV and the Phillips Attitude toward Self and Others Question-

naire, the Washburn S-A Inventory and numerous other measurements are reported in the Bills' Manual (Bills, 1951).

The original form of the IAV was developed by selecting 124 trait words which represented clear examples of self-concept definitions, from Allport and Odbert's list of 17,953 words (Wylie, 1961). In later refinements of the IAV the list was further reduced to 49 words which had the greatest test-retest stability. Six week test-retest correlations with 237 college students on the Acceptance of Self scores showed a +.83 correlation. For 16 weeks the correlation was +.79. Split-half reliability for the same norm group was +.91. Bills found the correlation between Acceptance of Self and Concept of Self scores to be +.90. As Wylie pointed out, this implies that these two indices do not have discriminant validity for inferring different aspects of self-regard but must be measuring essentially the same construct.

Bills' (1951) stated in his manual that the most important measure is the Acceptance of Self score. This is the score that was used in this study for pretest and posttest measures. It was obtained by first taking each of the 49 trait words and putting each one in the following sentence:

I AM A (AN) _____ PERSON.

One of the 49 trait words in the test was happy, so this word was placed in the above sentence. It then read--I am a happy person. The person taking the test next decided how much of the time this statement described herself, and then rated herself on a scale from 1 to 5 according to the following key:

1. Seldom, is this like me.
2. Occasionally, this is like me.
3. About half of the time, this is like me.
4. A good deal of the time, this is like me.
5. Most of the time, this is like me.

The above rating comprised the method used to determine Concept of Self scores. Although this score was not used with this study, it was a necessary step in securing the Acceptance of Self score, which was determined as follows. The person taking the test used one of the statements given below to tell how she felt about herself as described by her preceding response. The response choices were:

1. I very much dislike being as I am in this respect.
2. I dislike being as I am in this respect.
3. I neither dislike being as I am nor like being as I am in this respect.
4. I like being as I am in this respect.
5. I like very much being as I am in this respect.

The "being as I am" or Acceptance of Self score thus obtained always referred to the way the person being tested described herself in the Concept of Self statement which preceded it. Points from 1 to 5 were given on each of the 49 trait word responses. A minimum possible score of 49 could have resulted from answering all statements with the first response above. The maximum possible score of 245 could have been obtained by giving the fifth response to all statements.

In establishing the relative meaning of a subject's score, comparisons should be made with norms which have been established. With this test a normative group of 1728 college students was provided. This included students tested on the same form and

measure of this test as this research used. Subjects tested were from the University of Florida, the University of Louisville, the University of Minnesota, and the University of Kentucky. The distribution of scores for the four universities showed no statistically significant differences. The mean score on Acceptance of Self scores (Column II) was 171.8. The standard deviation was 24.77.

In comparing the normative group results with Western Michigan University students, the Acceptance of Self form was administered to 29 normal weight Physical Education female students. The mean score was 170.1. The other administrations to Teacher Education classes composed of mixed male and female students on campus provided results which were nearly as highly correlated. These tests confirmed that the Western Michigan University students, as a group, responded very similarly to students from other universities. The test, as administered, was reproduced for research use by permission of the author and is presented in Appendix B.

Procedures

This section provides a description of the procedures used in the implementation of this research. Included are sub-sections on the Waite Dietary Plan, treatment group control procedures, the research staff and the statistical hypotheses.

The procedures used in this study involved considerations for both effectiveness and efficiency of treatment approaches. The question of effectiveness was related to the specific research questions of relationships between groups on weight loss and self-

concept change. The question of efficiency was concerned with the contribution of each adapted component part of the weight control program in comparing results with the time and cost involved with each treatment. By considering both efficiency and effectiveness, a better determination of whether to recommend a complete weight control program (Treatment Group 3), as compared with the abbreviated programs (Treatment Groups 1 and 2) could be made. The amount of time and involvement between treatment approaches varied considerably. Thus these practical matters needed consideration in the interpretation and evaluation of results.

In comparing treatment groups it was necessary to use several procedures to control the independent variables in order to minimize the possibilities of unwanted and extraneous sources of variance effecting the statistical results. Two major procedures included the use of the Waite Dietary Plan in the three experimental groups and the adjustments made within the Women's Physical Education classes to minimize unequal treatment. An explanation of each procedure follows.

Waite Dietary Plan

As described in Chapter 2, longitudinal studies have confirmed that neither individual nor group counseling and psychotherapy approaches by themselves have resulted in improved long-term weight loss for obese participants. Similarly, dietary approaches which have not included individual or group supportive help have shown poor results. There have been no previous research studies using

a dietary plan as a control factor in examining the contribution of additive parts of a weight control program. By providing a common dietary program for each subject in the three treatment groups, the relative success of persons in attempting to follow the same eating procedures could be compared.

The Waite Dietary Plan is presented in Appendix A. It was developed by the researcher in consultation with the Home Economics Nutrition Department at Western Michigan University and has been nutritionally evaluated by a large hospital nutrition department. The plan includes selections from the four basic food groups advocated by the National Dairy Association--the milk group, meat group, vegetable and fruit group, and the bread and cereal group. These food groups are considered the cornerstones of well-balanced dietary plans, and offer, in proper balance, the essentials of good healthful nutrition. Calories were not counted, but meat, fish, poultry and vegetables were weighed on a small dietetic food scale until students became accustomed to the size of portions permitted by the program. The Waite Dietary Plan kit of materials, which was purchased by each student in the three treatment groups as required class material, included:

1. The dietary plan with instructions on following it.
2. A record booklet for recording and charting weekly weight change.
3. Daily food record planning sheets.
4. A height-weight-age chart for determining proper weight.
5. A dietetic food scale for weighing portions of certain foods.

Treatment group control procedures

In comparing the effectiveness between the treatment groups in losing weight, consideration was given both to the intake of food and the expenditure of energy. Thus in all four groups an attempt was made to keep the amount of physical activity balanced as equally as possible to control for weight loss due to this factor. Each class met for two one-hour periods per week. Subjects in Treatment Group 1, who were dieting on their own, had two full periods each week of physical activity. In Treatment Group 2 approximately 20 minutes of class time per week was used for individual weighing procedures. Thus an extra supervised activity assignment at the end of one class period was devised to adjust for this difference. In Treatment Group 3 two adjustments were made to compensate for having only one of the two class meetings each week devoted to physical education activities. Students had required, supervised laps to run around the track at the end of the weight control class period. Also more vigorous activity was required during their regular physical education class. Energy expenditures for particular exercises were calculated and a balance determined. In planning for the control group (Group 4), Beginning Swimming class sections were chosen partly because the caloric energy consumed most nearly matched that of the three experimental group classes.

The instructional needs necessary to complete this research involved, to varying degrees, a staff of five persons working with seven different sections of Women's Physical Education.

The research staff

The research staff and their major responsibilities included:

1. A graduate Masters Degree male student in Physical Education who handled, under the researcher's supervision, all physical education teaching responsibilities in the three experimental group classes (Groups 1, 2 and 3).
2. A female physical education student assistant who helped in general ways with class details. These included registering students, taking height and weight measurements in all groups, administering and scoring of self-concept tests and recording of statistical information relative to weight change and self-concept measurements.
3. The author, who handled instructional responsibilities in the class which received the complete weight control program (Group 3), as well as the procedures relative to gathering weight control and self-concept data in Groups 1 and 2.
4. Two regular instructors in the Women's Physical Education Department. They taught the four Physical Education Beginning Swimming classes which contained the control group subjects. With volunteer help, they handled the pre- and posttest weighing, measuring and self-concept testing. These procedures were followed by all class members in each class so that control group subjects would not know they were being singled out.

The planning for the administration of testing and measuring procedures and instructional tasks required establishing a precise operational time schedule. The Group Procedure Planning Chart which was used is presented in Appendix B.

This study was initiated during the fall semester of 1970. The selection of the sample and assignment of subjects into groups, as previously described, occurred during the preceding summer and early fall orientation and registration periods.

At the first class meeting of the second week the experimental

treatment groups (Group 1, 2 and 3) and all class members, obese and normal weight, in the control group classes (Group 4) were given the pretest administration of the Bills' Instrument, then weighed and measured. At the second class meeting of the second week, subjects in all three of the experimental treatment groups purchased the Waite Dietary Food Plan (Appendix A). A complete explanation of the food program was then presented with detailed instructions on how to follow it. No advance copies of the plan were made available to insure a uniform starting time for each subject. The two groups involved in weekly weigh-ins (Groups 2 and 3) were also provided the Weight Record Booklet in which their goal weight was indicated and their weight recorded and graphed for them each week.

At the first class meeting of the 14th week the posttest administrations of the Bills' Test were given, and a final weighing of all subjects taken. No subject varied more than two days from the assigned dates in completing pre- and posttest measurements. The Student Information Card provided a program procedure for recording all classroom data needed for all subjects in the study.

Treatment Group 1 subjects were given a complete explanation of the Waite Dietary Plan. They were told that they were to diet on their own. They were advised that at the end of the semester they would again be weighed. No mention was made that a second administration of the Bills' Instrument would be given. Students followed the regular Physical Education class procedures and had no further instruction on weight control dietary procedures.

The subjects in Treatment Group 2, following the presentation of the dietary plan, were advised that they would be weighed individually and privately at the beginning of the second class meeting of each week. Approximately 20 minutes was involved with completing this procedure. Each person brought her Record Booklet with her. Weight change was recorded and graphed. Persons were briefly encouraged or congratulated on their efforts. Questions on the dietary plan were answered briefly. This procedure continued weekly through the 14th week.

The subjects in Group 3 received identical treatment to those in Group 2. In addition, however, their second weekly meeting was devoted totally to a weight control class session rather than to physical education activities. The Group 3 class meeting contained four separate instructional objectives. These included (1) the weighing of subjects, (2) the lecture, (3) the group discussion and (4) the recognition of achievement. The weighing procedure offered a brief opportunity for individual reinforcement. Students who showed weight loss for their week's effort were congratulated. The recording and graphing of weekly and cumulative weight loss in the student's Record Booklet offered additional positive reinforcement. In cases of weight gain persons were simply encouraged to keep trying.

The lecture period was used to make brief presentations on psychological or dietary concerns. Topics included good nutrition, problems related to dormitory eating and the relationships of loneliness, tensions and anxiety to overeating. The group discussion periods which followed were informal and open. Included were

personal testimonies, sharing of successful experiences and discussion of new low calorie recipes.

The recognition of achievement period offered both individual and group motivation. A goal by the 22 subjects to lose 500 pounds was expressed in the form of a barometric-shaped chart. Weekly group weight loss progress was indicated in 10-pound units. In addition, the three subjects who had the best weekly losses were recognized and their specific losses mentioned. Each was given a brief opportunity to comment on her successful achievement. Progress of subjects was always mentioned in terms of weekly or cumulative weight loss. The person's actual weight was not mentioned unless she wished to mention it. Finally each subject in Group 3 had her picture taken both at the beginning and the end of the program. These were the major procedures used in conducting the complete weight control class program.

The control group (Group 4) contained 16 subjects distributed between four Beginning Swimming Physical Education classes. The two instructors provided complete pre- and posttest measurements to all class members. The weighing of students was described to them as a routine class procedure. The self-concept test was presented as part of a general university research project. These two steps were taken so that control group subjects would remain unaware of their involvement in the study.

As previously described, four of the subjects who had initially been volunteers, were enrolled in the Beginning Swimming classes, and then were informed by letter (Appendix B) of their exclusion.

The other 12 subjects were overweight girls, normally enrolled, who had neither been approved nor volunteered for the study. The control group subjects (Group 4) differed from the experimental treatment groups (Groups 1, 2 and 3) in two important ways. They were not, as a group, attempting to diet, and they were not provided a specific dietary plan to follow.

Statistical hypotheses

In this study three hypotheses were tested to determine comparisons between four treatment groups with obese subjects on mean weight loss and self-concept change. Subjects were further sub-divided within groups by three classifications based on degree of obesity. This provided 12 cells in the model design as shown in Table 4. It was hypothesized that after specific treatment procedures were followed for a 12-week period, there would be no significant differences between groups or correlation among subjects on the two dependent variables measured. Stated in null form, the hypotheses were:

- Ho (1): There will be no difference between groups in average weight loss during the 12-week period of the study.
- Ho (2): There will be no difference between groups in self-concept change during the 12-week period of the study.
- Ho (3): There will be no correlation among all subjects on degree of weight loss and self-concept change during the 12-week period of the study.

Analysis of Data

Several statistical models were used in determining the nature and degree of relationship between independent and dependent variables. A description of these procedures follows.

A two-way analysis of variance model for unbalanced design was the method used to test the first two hypotheses. It was hypothesized that no significant differences between groups on the two dependent variables of average weight loss and self-concept change would be found.

The two independent variables, Treatment Groups 1, 2, 3 and 4, and Degree of Overweight Groups A, B and C, provided a natural procedure for a two-way design. The adjustment for an unweighted design was made to account for the unequal number of subjects within cells (Winer, 1962).

The two-way analysis procedure was done first with average weight loss change, and then repeated for average self-concept change. In both cases the procedure was designed to determine whether significant differences occurred in comparing the means between treatment groups (Groups 1, 2, 3 and 4), comparing the means between groups classified by degree of overweight (Groups A, B and C), or in interaction. This was determined by computing F ratios and comparing results with the criterion F. This was followed by estimating the strength of association between the treatment effects--Treatment Groups 1, 2, 3 and 4, comparing the means between groups classified by Degree of Overweight Groups

A, B and C, or in interaction. This was determined by computing F ratios and comparing results with the criterion F. This was followed by estimating the strength of association between the treatment effects--Treatment Groups 1, 2, 3 and 4 and Degree of Obesity Groups A, B and C, and interaction--with each of the two dependent variables, average weight loss and self-concept change (Hays, 1963). The design for this model was presented in Table 4.

It was planned to follow this analysis, where significant F ratios were found, with Tukey post hoc procedures. The purpose was to locate specific differences first between the treatment groups and then between the degree of obesity groups.

Finally a correlation analysis was made among all subjects on the two dependent variables, self-concept change and weight loss. For further clarification a correlation analysis was also done among subjects in each of the Treatment Groups 1, 2, 3 and 4 and in each of the Degree of Overweight Groups A, B and C. Pearson correlation coefficients were used.

CHAPTER IV

RESEARCH FINDINGS

Introduction

In this chapter the statistical evidence pertaining to the null hypotheses listed in Chapter I is presented. The findings are reported first in relation to the dependent variable, mean weight loss. A table presenting means, standard deviations and cell sizes is followed by a two-way analysis of variance table. Included is an estimate of the strength of association, omega square, between mean weight loss and each of the effects. This was followed by a Tukey HSD procedure with adjustment for unequal cells. These post hoc comparisons were used to locate the specific significant differences, first between Treatment Group means and then Degree of Obesity Group means.

The procedures for reporting results in relationship to the second dependent variable, mean self-concept change, were the same as with weight loss. Again a two-way analysis of variance procedure was used.

A correlation analysis between weight loss and self-concept change was determined first among all subjects in the study and then between subjects in each Treatment Group (Groups 1, 2, 3 and 4) and each Degree of Obesity Group (Groups A, B and C). Finally, a section on related findings presents more detailed information on the research results.

In reporting the results of this study, hypotheses are first

stated, findings are presented, and a statement of whether each hypothesis was rejected or accepted is made. A summary section on the findings concludes the chapter.

The First Hypothesis

The first question with which this study was concerned was whether Treatment Groups 1, 2, 3 and 4 differed significantly in relationship to the average weight loss of subjects. Tables 7 and 8 present data related to the testing of the first hypothesis. Stated in null form it is:

Ho(1): There will be no significant difference
between groups in average weight loss
during the 12-week period of the study.

Two-way analysis of variance

To test the first hypothesis a two-way analysis of variance (ANOVA) was used. In Table 7 are presented the weight loss means, standard deviations and number of subjects by cells with marginal totals for both Treatment Groups and Degree of Obesity Groups. The two-way ANOVA table with mean weight loss as the dependent variable is presented in Table 8.

In a two-way ANOVA the term interaction indicates that one independent variable behaves differently under different levels of the other independent variable. In this study the comparison was between Group Treatments 1, 2, 3 and 4 and Degree of Obesity Groups A, B and C. In relationship to the first dependent variable, mean weight loss, there was no significant interaction. The computed F

TABLE 7

TABLE OF WEIGHT LOSS MEANS (\bar{X}), STANDARD DEVIATIONS (S),
AND SUBJECTS BY CELLS (N) WITH MARGINAL TOTALS

	Treatment Group 1	Treatment Group 2	Treatment Group 3	Treatment Group 4	TOTALS
Degree of Obesity Group A	$\bar{X} + .75$ S 2.27 N 3	- 2.68 4.75 7	- 3.95 5.77 5	+ 3.45 3.52 5	$\bar{X} - .95$ S 5.35 N 20
Degree of Obesity Group B	- 2.70 6.09 5	- 3.77 5.07 12	- 3.05 7.50 10	+ 3.29 5.22 6	- 2.09 6.60 33
Degree of Obesity Group C	- .79 10.47 6	- 4.92 10.88 3	-14.86 9.55 7	- 3.65 6.00 5	- 6.76 11.05 21
TOTALS	$\bar{X} - 1.14$ S 7.94 N 14	- 3.59 6.15 22	- 7.00 9.54 22	+ 1.19 5.99 16	$\bar{X} - 3.11$ S 8.20 N 74

The plus (+) sign indicates a mean weight gain

ratio was .95. The Table F ratio based on the .05 level of significance was 2.25. The non-significant interaction indicated there was no cell specific effect. The traditional procedure used when looking at a main effect in the absence of interaction is a comparison of the marginal means of that main effect.

The two-way analysis of variance indicated that the null hypothesis concerning treatment groups was rejected at the .05 level of significance. The computed F ratio of 3.73 was larger than the Table F figure of 2.76. This indicated that somewhere in the

TABLE 8

WEIGHT LOSS
SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE

Source of Variation	SS	df	MS	F.95	Table F	Omega Square
Treatment Groups 1, 2, 3 & 4 (Columns)	623.76	3	207.92	3.73*	2.76	.095
Degree of Obesity Groups A, B & C (Rows)	358.13	2	179.07	3.22*	3.15	.051
Interaction	314.13	6	52.91	.95	2.25	.00
Within Cell	3452.47	62	55.69			

* $p < .05$

relationships between the treatment groups a significant difference did occur. Similarly the Degree of Obesity F ratio showed that a significant relationship at the .05 level also existed within these overweight categories. The computed F ratio was 3.22 and the Table F was 3.15.

The Tukey post hoc procedures

The two-way analysis of variance indicated that significant differences between Treatment Group means existed. Also significant differences between Degree of Obesity Group means were found. The Tukey HSD (Honestly Significant Differences) test was designed to locate the significant differences by making all pair-wise

comparisons among means (Kirk, 1968). A comparison involving two means was declared to be significant if it exceeded HSD which is computed by the following formula:

$$HSD = q \sqrt{\frac{MS_{error}}{\tilde{n}}}$$

The value of q was determined from a Studentized Range Table developed by Tukey for this test. The \tilde{n} is an adjusted computation Tukey developed for unequal cell sizes. The results of the Tukey procedures are presented in Tables 9 and 10.

TABLE 9

TUKEY HSD TEST FOR COMPARING DIFFERENCES
AMONG WEIGHT LOSS TREATMENT GROUP MEANS

	\bar{x}_4	\bar{x}_1	\bar{x}_2	\bar{x}_3
$\bar{x}_4 = -1.19$		2.33	4.78	8.19*
$\bar{x}_1 = 1.14$			2.45	5.86
$\bar{x}_2 = 3.59$				3.41
$\bar{x}_3 = 7.00$				
* $p < .05$ HSD = 6.60				

The value for HSD needed for significance at the .05 level was computed to be 6.60. The Tukey test showed a significant difference between the complete treatment procedure (Group 3) and the control group (Group 4) since the difference between the Group 3 and Group 4 means was 8.19.

TABLE 10

TUKEY HSD TEST FOR COMPARING DIFFERENCES
AMONG WEIGHT LOSS DEGREE OF OBESITY GROUP MEANS

		\bar{x}_A	\bar{x}_B	\bar{x}_C
\bar{x}_A	= .95		1.14	5.81*
\bar{x}_B	2.09			4.67
\bar{x}_C	6.76			

* $P < .05$

HSD = 5.23

A significant difference at the .05 level was observed (Table 10) between Degree of Obesity Group C, subjects 43 or more pounds overweight, and Group A, subjects 12 to 22 pounds overweight. The computed value for HSD was 5.23. These two means differed by 5.81. The mean weight loss for Group C subjects was 6.76 pounds. Group A subjects had a mean weight loss of .95 pounds.

Strength of association

To assess the strength of association for a two-way analysis of variance represented by either significant treatment or interaction effects, omega square is determined. This measure estimates the amount of variance in the dependent variable accounted for individually by each of the sources of variation. The determination of omega square provides a means by which a better decision can be made by using both significance level and strength of relation than by taking

either statistical measurement alone (Hays, 1963, p. 406-7). The omega square estimates (Table 8) indicated:

- (1) Nearly 10 percent of the weight loss variance was accounted for by the treatment group effect (Groups 1, 2, 3 and 4).
- (2) Five percent of the weight loss variance was accounted for in the Degree of Obesity Group effect (Groups A, B and C).
- (3) None of the weight loss variance can be accounted for by the interaction effect.

These omega square comparisons showed that a weak relationship existed between weight loss and degree of overweight. A somewhat stronger relationship was found between treatment effect and weight loss.

The Second Hypothesis

The second question investigated was concerned with the effect of differing Treatment Groups (Groups 1, 2, 3 and 4) on self-concept change of subjects. The null hypothesis stated:

- Ho(2): There will be no significant difference between groups in self-concept change during the 12-week period of the study.

Two-way analysis of variance

The procedures used for the weight loss two-way ANOVA were repeated with self-concept change as the dependent variable. Table 11 provides the self-concept change means, standard deviations and number of subjects by cells with marginal totals for both Treatment Groups and Degree of Obesity Groups. The summary of the two-way

TABLE 11

TABLE OF SELF-CONCEPT CHANGE MEANS (\bar{X}), STANDARD DEVIATIONS (S),
AND SUBJECTS BY CELLS (N) WITH MARGINAL TOTALS

	Treatment Group 1	Treatment Group 2	Treatment Group 3	Treatment Group 4	TOTALS
Degree of Obesity Group A	\bar{X} 36.33 S 25.63 N 3	9.29 23.53 7	.20 10.91 5	11.40 9.83 5	\bar{X} 11.60 S 21.73 N 20
Degree of Obesity Group B	7.80 22.10 5	10.67 14.29 12	.20 21.88 10	19.50 10.14 6	8.67 18.89 33
Degree of Obesity Group C	19.17 16.90 6	18.33 6.65 3	16.29 19.79 7	10.80 18.26 5	16.10 17.55 21
TOTALS	\bar{X} 18.79 S 23.38 N 14	11.27 17.37 22	5.32 20.62 22	14.25 13.77 16	\bar{X} 11.57 S 19.59 N 74

analysis of variance with self-concept change as the dependent variable is shown in Table 12. No significant interaction effect was found. The computed F ratio was 1.37. The Table F ratio based on the .05 level of significance was 2.25. This again indicated that there was no cell specific effect.

The results of this two-way analysis of variance indicated that the null hypothesis was accepted. There was no reason to believe that there were significant differences between groups on self-concept change. The computed F ratio was 1.70. To have been significant at the .05 level a figure of 2.76 was needed. Likewise the F ratio

TABLE 12

SELF-CONCEPT CHANGE
SUMMARY OF TWO-WAY ANALYSIS OF VARIANCE

Source of Variation	SS	df	MS	F.95	Table F
Treatment Groups 1, 2, 3 & 4 (Columns)	1925.52	3	641.84	1.70	2.76
Degree of Obesity Groups A, B & C (Rows)	491.50	2	245.75	.65	3.15
Interaction	3104.29	6	517.38	1.37	2.25
Within Cell	23474.39	62	378.62		

measuring the degree of obesity effect showed that there was no significant relationship between self-concept change and the degree of overweight classifications. The computed F ratio was .65. The Table F ratio was 3.15. Self-concept change was not significantly affected by either differing treatment groups, differing amounts of overweight or by any interaction of these two independent variables.

The Third Hypothesis

The third question with which this research was concerned was the correlation between weight loss and self-concept change for all subjects in the study. The null hypothesis stated:

Ho(3): There will be no correlation among all subjects between degree of weight loss and self-concept change during the 12-week period of the study.

Table 13 presents the correlation data obtained by the use of Pearson correlation coefficients. The null hypothesis was accepted. The correlation obtained was .072. To have been significant at the .05 level with 74 subjects a correlation of .232 or larger was needed. Thus there was no reason to believe that there was relationship between weight loss and self-concept change.

Table 13 also provides correlations between self-concept change and weight loss within each of the Treatment Groups and each of the

TABLE 13

WEIGHT LOSS AND SELF-CONCEPT CHANGE
CORRELATION AMONG ALL SUBJECTS,
AMONG TREATMENT GROUPS AND DEGREE OF OBESITY GROUPS

Correlations	N	df N-2	Computed "r"	Value of "r" at .05 level
All members in sample	74	72	.072	.232 N.S.
Treatment Group 1	14	12	.023	.532 N.S.
Treatment Group 2	22	20	.173	.423 N.S.
Treatment Group 3	22	20	.393	.423 N.S.
Treatment Group 4	16	14	-.295	.497 N.S.
Degree of Obesity Group A	20	18	.085	.444 N.S.
Degree of Obesity Group B	33	31	-.060	.349 N.S.
Degree of Obesity Group C	21	19	.114	.433 N.S.

N.S. - Not Significant

Degree of Obesity Groups. The small number of subjects in each correlation puts limited interpretations on the results. The data showed that no significant correlations were obtained at the .05 level. Treatment Groups 1, 2 and 3 each had a positive sample correlation. Group 4, the control group, had a negative sample correlation.

Related Findings

The related findings are presented in the following two subsections on weight loss and self-concept.

Weight loss

The results of this study provided two basic weight loss findings. They are described below:

1. The subjects receiving the full weight control class program (Group 3) lost significantly more weight than the control group (Group 4). The significant difference between Groups 3 and 4 represented a mean weight loss of 7.01 pounds as compared to a mean weight gain of 1.17 pounds. The group class meeting, in conjunction with the dietary plan, was the most significant factor in the successful weight reduction program.
2. The most overweight subjects (Group C) lost significantly more weight than the least overweight group (Group A). Table 14 shows that the 21 most overweight subjects (Group C) had an average loss of slightly over 6 pounds each. This compared with a loss of slightly less than 1 pound for the 20 least overweight subjects in Group A.

TABLE 14

SUMMARY OF SELF-CONCEPT CHANGE MEANS AND WEIGHT CHANGE
MEANS BY CELLS AND WITH MARGINAL TOTALS

	Treatment Group 1	Treatment Group 2	Treatment Group 3	Treatment Group 4	TOTALS
Degree of Obesity Group A	+33.33 + .75	+ 9.29 - 2.68	+ .20 - 3.95	+11.40 + 3.45	+11.60 - .95
Degree of Obesity Group B	+ 7.80 - 2.70	+10.67 - 3.77	+ .20 - 3.05	+19.50 + 3.29	+ 8.67 - 2.09
Degree of Obesity Group C	+19.17 - .79	+18.33 - 4.92	+16.29 -14.86	+10.80 - 3.65	+16.10 - 6.16
TOTALS	+18.79 - 1.14	+11.27 - 3.59	+ 5.32 - 7.00	+14.25 + 1.19	+11.57 - 3.11

The Group C-3 subjects, those most overweight who received the complete weight reduction program, lost, on an average, nearly 15 pounds per person. This was more than three times as much weight loss as the next most successful group cell in the study. In the control group (Group 4), although both cells A-4 and B-4 had weight gains, cell C-4 had a 3.65 pound loss.

3. The previous finding of the study showed only that the most obese students (Group C) lost significantly more weight than the least overweight group (Group A). It was decided to test whether

this conclusion could be broadened to state that the more overweight the subjects were, the more weight they would lose on the average. To make this computation an F test for Linear Trend was used (Hays, 1963, p. 682). Using the data from the two-way ANOVA, with weight loss as the dependent variable (Table 8), a computed F ratio of 4.74 was obtained. The Table F value was 4.00. Thus the broader interpretation proved valid. Table 15 provides the summary data on this analysis.

TABLE 15

SUMMARY OF TEST FOR LINEAR TREND

	SS	df	MS	F	Table F
Linear	264.05	1	264.05	4.74*	4.00
Quadratic	97.42	1	97.42	1.75	4.00
Error	55.69				

*Significant at the .05 level.

4. Another finding from the study showed that overweight students who were trying to follow the diet on their own (Group 1) basically showed no better results at the end of the 12-week period than did the overweight students in Control Group 4 who were not following a diet and were not directly involved in the research. Table 16 shows how little the difference was between these two groups.

TABLE 16

COMPARISON OF WEIGHT LOSS RESULTS BETWEEN
GROUP 1 AND GROUP 4 SUBJECTS

Subjects by differing degrees of weight change	Group 1 (Dieting on their own)	Group 4 (Control)
Those losing over 5 pounds	19% (about 1 in 5)	19% (about 1 in 5)
Those losing 0 - 5 pounds	37% (about 1 in 3)	25% (1 in 4)
Those gaining weight	44% (9 in 20)	56% (11 in 20)

5. The study was designed to deal with mean weight change. Table 17 provides a comparison of significant individual achievement--weight loss of over 10 pounds by subjects during the 12-week period. Eight of the 14 most successful dieters in the study were in the full treatment group (Group 3) as well as 4 of the 5 best weight losers. These figures indicate that 22.4 percent, better than 1 in 5 of the subjects in Treatment Groups 1, 2 and 3, had weight losses of more than 10 pounds. In Group 3 alone, 36.2 percent (8 of 22) exceeded 10 pounds of loss.

Self-concept

Self-concept change was not found to be significant in relationship to either the differing types of treatment or the differing

TABLE 17

INDIVIDUAL WEIGHT LOSSES OVER 10 POUNDS

	Treatment Group 1	Treatment Group 2	Treatment Group 3	Treatment Group 4
Degree of Obesity Group A			-12½	
Degree of Obesity Group B	-13	-11½ -11½	-13 -11 -16½	
Degree of Obesity Group C	-14½	-20	-18½ -27 3/4 -28½ -11½	-12

degrees of overweight. There were, however, two related findings which resulted from the use of this measurement.

1. Several researchers, as presented in Rasmussen's (1968) study, have hypothesized that overweight students have lower self-concepts than do students of normal weight. There have been, however, no norm groups available on which to substantiate this conclusion. In using the Bills' Index of Adjustment and Values, a select group of obese university subjects was compared with a norm group representing 1728 average students from four different four-year colleges. The mean score for the norm group on the pretest of the Bills' Instrument used with this study was 171.86. With a group of 29 female normal weight students at Western Michigan University

TABLE 18

COMPARISONS OF PRETEST SCORES OF SUBJECTS ON THE
BILLS' INDEX OF ADJUSTMENT AND VALUES ACCEPTANCE
OF SELF MEASUREMENT

	Treatment Group 1	Treatment Group 2	Treatment Group 3	Treatment Group 4	TOTALS
Degree of Obesity Group A	N 3 S 148.0	7 169.1	5 166.2	5 189.6	N 20 S 170.6
Degree of Obesity Group B	5 186.8	12 159.1	10 154.6	6 172.8	33 164.5
Degree of Obesity Group C	6 156.5	3 161.0	7 158.1	5 160.6	21 158.6
TOTALS	N 14 S 165.5	22 162.5	22 158.4	16 174.2	N 74 S 164.5

N=Number of Subjects. S= Pretest Acceptance of Self Score.

a very similar mean score of 170.1 was obtained. For comparison the mean scores for overweight subjects in this study are presented in Table 18. The mean of 170.6 for Group A was very close to the national norm. Group B showed a mean of 164.5 and Group C a mean of 158.6. These scores, even though based on a small sample, provide a norm group and tend to substantiate the conclusion of other researchers that obese students do score lower on self-concept measurements.

2. The raw data comparing mean self-concept change and mean weight loss by cells (Table 14) showed that in each cell in which weight gain occurred, greater than average self-concept improvement also resulted. In the three cells in which subjects showed a weight gain (Cells A-1, A-4 and B-4), they also showed an improvement in self-concept change which was considerably greater than the average positive change for all 74 subjects in the study. The mean self-concept change for the 14 subjects in these cells was 19.57. For all 74 subjects it was 11.57.

In contrast to this observation, the subjects in Cells A-3 and B-3 of Treatment Group 3, who lost 3.95 and 3.05 pounds respectively, had virtually no self-concept change improvement. Yet their weight loss exceeded the average of 3.11 pounds for all subjects. A discussion of this data is included in Chapter V.

Summary

The research findings were reported individually for each of the three null hypotheses. The first null hypothesis was rejected. A significant difference in weight loss was found both between Treatment Groups and Degree of Obesity groups, but not by the interaction of these two independent variables. By further analysis specific mean differences were found between Treatment Groups 3 and 4 and Degree of Obesity Groups A and C. The full treatment was significantly more effective than the effects of no treatment as found in the control group. Also the most overweight subjects were significantly more effective in losing weight than those in the

least overweight group.

The second null hypothesis was accepted. There was no significant relationship between self-concept change and either of the two independent variables individually or in interaction with each other.

The third null hypothesis was accepted. No significant relationship was found between weight loss and self-concept change among the 74 subjects as a group or among any of the individual Treatment Groups or Degree of Obesity Groups.

A section on related findings provided additional data relative to weight loss and self-concept.

In Chapter 5 a summary of the study is provided, and a discussion of the findings, as well as implications and recommendations for further research, is presented.

CHAPTER V

SUMMARY, DISCUSSION AND IMPLICATIONS

Summary

The problem of obesity has become the concern of many disciplines including public health, mental health and medicine. Recently educational researchers have entered the field. Increasing concern has developed over the large group of overweight students with social, emotional and health problems. These students score lower in measurements of self-concept than do normal weight students. Also they perform lower in academic achievement. Within the lower socioeconomic groups the incidence of this problem is further sharply increased. Unless helped, the vast majority of these students will also become overweight adults.

Psychological researchers have not found a specific type of personality profile by which to categorize all obese people. Overweight persons generally are less flexible and tend to avoid physical activity. Some investigators have recently noted that this group has a high incidence of deficits in perceptual and conceptual abilities. There is considerable belief that for many obese persons food has become an oral substitute for a misplaced or limited experience of maternal love.

With increasing emphasis on the inner person, an interest has grown in the relationship between self-concept and obesity. Many researchers have found that a person's concept of himself does not

easily change. It is something which the person maintains frequently at considerable cost to himself and is directly-related to one's state of mental health. Persons who see themselves as undesirable or worthless tend to act that way.

Several investigators have confirmed a close relationship between self-concept and the concept a person has of his body. Body characteristics which are lowly valued tend to undermine general self-regard. Research has shown that overweight students have poorer self-concepts than do students of normal weight. There remains, however, disagreement as to the potential for improvement and change. No conclusive studies have appeared to test the relationship between weight loss and self-concept change with obese subjects.

Treatment approaches in obesity have been criticized on the basis of poor design and methodology. Reviews of weight reduction studies and programs have indicated poor results--attrition rates have been high and weight loss limited. New trends, however, are developing. Group procedures increasingly have been replacing individual treatment. Studies confirm that better weight loss and lower incidence of attrition have resulted. Repeated studies confirm that counseling, either individual or group, as a single treatment procedure, does not result in long term weight loss for the obese person. Supportive help, however, is of major importance. Other components clearly are needed in the treatment process.

Review of the study

The purpose of this study was to assess the contribution of

individual and group motivation and reinforcement procedures in combination with a dietary approach in helping overweight female students at Western Michigan University. Comparisons were made between the effectiveness of a total weight reduction program and use of abbreviated versions as treatment procedures. Group weight loss and self-concept change were compared.

A unique feature of this study was that each group of students was instructed to follow the same dietary procedure. For this purpose a complete dietary plan was developed by the author. A control group of overweight students not attempting to diet was used for comparison.

The basic weight loss findings indicated that the full treatment (Group 3) was significantly more effective than the control group (Group 4). In addition, the most overweight subjects (Group C) were significantly more effective in losing weight than those least overweight (Group A). A trend was also found indicating that the more overweight the subjects were, the more weight they lost on the average.

Self-concept change was not significantly affected by either the differing treatment groups, the differing degrees of overweight or by any interaction of these two independent variables.

No significant correlations were found between weight loss and self-concept change among the 74 subjects as a group or among any of the individual Treatment Groups or Degree of Obesity Groups.

Educational and Clinical Considerations

The need for new program and treatment procedures in working with overweight persons presents a major challenge. This research has shown that a dietary plan, combined with group motivational and reinforcement procedures, was more effective than the other treatments for helping students. Consideration is now given for the application of the weight control program to educational and clinical settings.

Educational considerations

In examining high school and college curricula, the problems of the overweight student might be considered, to some degree, in all of the following areas:

1. Health education
2. Home economics
3. Physical education
4. Counseling
5. School social work
6. Community education programs

It appears that the best alternative choice in the educational setting is the community school program. Obese students can be grouped with others who have need for group therapy treatment. Courses which deal with nutritional, dietary and related concerns of overweight students can be improved. Obese students, however, similar to persons with alcohol or drug problems, need specialized help which involves separation from classmates who do not have these needs.

Health education in public schools traditionally has treated

obesity with minor consideration and covered it in a strictly factual manner. Although good nutritional knowledge for the overweight student might be obtained, and the importance of a well-balanced nutritional menu stressed, most obese students, without help, cannot translate this type of learning into an effective method of losing weight. A health education class would probably have about one student in ten with a weight problem. This type of class might best be useful in making the overweight student aware of his problem and in referring him to a specific program in which just overweight students were involved.

Home economics curricula in the high school deal not only with food preparation and cooking, but with broad consideration for personal and family living. There is need for clear basic nutritional information in the core curricula offerings. Detailed information on vitamins, minerals and carbohydrates should be saved for courses in nutrition. Knowledge of the four basic food groups, the need for iron and daily requirements of Vitamin C is necessary. At this point students need practice in applying this knowledge in practical eating assignments so that the learning and benefits are integrated in personal experience. A home economics class, like health education, could best serve obese students by preparing the teacher to refer such students to a special program.

In most high schools and colleges physical education is still a required program. Frequently, adapted or special physical education programs are made available for students with physical or health problems. Thus, the obese student could quite naturally be

referred into a special physical education program combining physical activities best suited to his or her present physical condition and offering a related weight reduction program. At the college level special classes can be established provided educators can adapt procedures to the type of program needed. The chief problems encountered with a combined physical education weight reduction program at the high school level are:

1. An individual high school does not usually have a large enough group of volunteer overweight students interested in dieting to warrant a special class in weight reduction.
2. Scheduling becomes a special problem. It is difficult to find a non-conflicting time where students in each grade can meet together--especially in schools where a large percentage of students are bussed.

The high school counselor and school social worker both have a role in which individual needs of students can be met. The social worker frequently has the advantage of better direct access to the student's parents. The high school counselor, however, functions in a focal position within the school. He or she has direct daily contact with students, the teaching staff and administration. The counselor is in an important position to act as a catalyst and referrer to a program in weight reduction.

Community school programs appear to offer the most advantages with the fewest disadvantages. They are listed as follows:

1. Community school programs can serve all educational levels as well as non-student community members.
2. The major advantages of a secondary or higher education referral system could still be developed. Faculty members in physical education, home economics,

health education, school social work or counseling could still be instrumental in referring students needing this service.

3. Students can attend an evening class where scheduling problems and respect for the person's privacy can be better handled. Also family members can join and work together.

Clinical considerations

In discussing the treatment of obesity, consideration should be given to the clinical setting. Obesity, like alcoholism, is a problem that affects people on a continuum of severity of symptoms and treatment needs. With some overweight persons a simple effort at short-term dietary control may correct a problem best handled by self-management. At the other extreme, the obese person may be as helpless and have as desperate a need as does the severe alcoholic. The incidence of success by obese persons in reaching desired weight loss objectives and maintaining the loss is poor. Efforts at helping the overweight person have been placed largely on external control factors--dietary, nutritional and exercise considerations. Professional treatment services for the overweight have been slow in developing. Skilled professional persons, capable of handling the complete needs of obese persons, are needed. Effective group therapy procedures with clients limit considerations to no more than 10 or 12 persons in a group. Individualized help is also needed. There are obviously a great many obese persons receiving limited, temporary or ineffective help with their problem. New emphasis should be placed on developing services in which the total needs of overweight persons can be met.

The Waite Dietary Plan

The Waite Dietary Plan (Appendix A) was devised to meet several specific needs of dieters. The following are some of the factors which influenced the development of this plan:

1. A dietary plan needs to be simple, easy to follow, yet varied and balanced nutritionally--offering selections from the four basic food groups. Overweight persons are frequently confused by the vast amount of conflicting nutritional information for dieters on such subjects as carbohydrates, health foods, protein, vitamins, minerals, food exchanges and crash diets.
2. A dietary plan should be a life-long program for eating for most overweight persons. It should be followed when proper weight is achieved with some new foods added to maintain proper weight. It should not be a temporary plan of eating with short-term, quick weight loss objectives.
3. A dietary plan should be based on helping the person to achieve gradual weight loss. Dietary plans which provide much less than 1200 calories per day for women are not realistic. Total proper nutritional needs are difficult to maintain on fewer calories per day. Also dieters tend not to stay for long periods with diets providing fewer calories.
4. A dietary plan should provide supplemental materials necessary for proper implementation. These include procedures for recording and charting weight loss progress, food record planning sheets, a goal weight chart and simplified instructions.
5. A dietary plan in which a few foods must be weighed, rather than keeping a total diet calorie count, is psychologically easier for dieters to follow.

Implications for Further Research

In exploratory research certain findings beyond those covered by the specific research hypotheses may be found. Some supplemental findings in this study have been documented, some are new treatment considerations, and some are presented as hypotheses for future research. They are described below with a brief rationale.

1. Two factors necessary in a weight reduction program have been fairly well established by this study--an effective nutritional approach and a supportive group therapy experience. Further research, using group counseling and a dietary plan as control procedures in treatment groups, would offer a good basis for testing other variables.
2. One major observation from the study was that the Group 1 subjects, those attempting to diet on their own, tended to follow the dietary plan about three weeks on an average. Data, however, were not gathered to substantiate this finding. Similarly, Group 2 subjects, those weighed weekly, progressed about evenly with Group 3 subjects, who received the full treatment, for about the first six weeks. For the final six week period Group 2 made very little further progress. Group 3, however, continued to progress at about the same rate. Further research consideration might be given to the hypothesis that the more supportive the help offered, the longer weight control groups are able to continue to make progress at dieting. The findings of Rasmussen (1968) add support to this hypothesis. Her study showed that group supportive help resulted in much greater weight losses for subjects and a much lower attrition rate than did individual help.
3. It was observed that subjects who ate together and communicated with each other during the week did considerably better than subjects whose only contact with fellow classmates was during the class period. The best weight loser in the study, who lost 28½ pounds, paired up with an obese friend not connected with the study and shared the Waite Dietary Plan with her. They ate together and discussed common dietary concerns several times a week. The unofficial report

was that the friend lost in excess of 25 pounds. Within the study, the second and fourth best weight losers also worked at dieting together in similar fashion. Pairing of obese subjects in differing treatment procedures offers potential for future studies.

4. No other study was found in which subjects were grouped by their degree of overweight. Further research might also be concerned with the relationship between the degree of overweight and the types of treatment offered.
5. One of the most needed areas for new research is a longitudinal study which would examine the differences between persons who lose weight and keep it off successfully for at least one year, as compared to the majority who lose it only to regain it. A study of this nature might provide answers in developing new program approaches to help the overweight.
6. In reviewing literature there is much in common between the underlying symptoms of obesity and those of other substance abuse areas--alcoholism and drug abuse. Research effort might profitably explore a common basis for treatment between these problems.
7. The reportedly high incidence of obesity in low socioeconomic groups might be examined as one research concern. It would be profitable to isolate and identify the factors involved.
8. The raw data in this study showed obese students to have increasingly lower self-concept pretest measures as the degree of obesity increased. There is need for this observation to be substantiated by other researchers and for norm groups to be established. Studies comparing pretest self-concept measures and academic achievement of obese would then have a better statistical base.
9. In Chapter IV it was shown that the least overweight girls in Treatment Group 1, those trying to diet on their own, as well as the least overweight and the moderately overweight subjects in Control Group 4, all had weight gains. It was also observed that these 14 subjects, as a group, had self-concept change improvement (+19.57 points) which was considerably above the average for all subjects (+11.57 points). In contrast, the least overweight and the moderately overweight subjects receiving the full weight reduction

program showed virtually no improvement in self-concept change (+.20 points each). Yet, they had respective weight losses of -3.95 pounds and -3.05 pounds which about equalled or exceeded the average loss for all subjects in the study of 3.11 pounds. There are two interesting theoretical questions resulting from this data:

- a. Are the least successful weight losers in the most successful weight reduction group somehow penalized in self-concept change when compared with the least successful weight losers in less successful groups?
- b. Do group sharing experiences initially cause persons to become more consciously aware of problems they had been repressing? Until self-awareness results in positive change, does self-concept not improve, or perhaps even decrease?

Other researchers have found difficulty in working with self-concept measurement. Rasmussen (1968) similarly found (1) no significant results in self-concept change comparisons between treatment groups, and (2) all self-concept change scores moved in a positive direction in pretest and posttest comparisons. If the first theoretical hypothesis was found to be valid, then self-concept change should not be used in this type of research. If the second hypothesis proved true, then self-concept change should at best be limited to longitudinal studies. Much more study and research in self-concept change as a measurement tool is needed. Studies limited to self-concept pretest comparisons offers better research possibilities.

This section has presented some supplemental findings, new hypotheses for further research have been provided, and some new treatment considerations are offered. In the final section the theory and consideration of a new treatment approach is described.

A New Treatment Approach

In future research on obesity it might prove profitable to compare some of the common methodology and symptomatology between

minimal brain dysfunction, or perceptual impairment, and obesity. The results of this study and related work in weight control, as well as the findings of other researchers, suggest several new treatment concepts. The theory and implications involved are presented in brief form.

There is increasing evidence for treating obesity as a form of learning disability or symptomatic of perceptual impairment. Bruch (1961) and Schrachter (1969) pointed out that the obese have difficulty in drawing conclusions about sensations and impulses arising from within the organism, and differentiating them from those stimuli which are motivated by external factors. The pattern is similar to that found in many cases of perceptually handicapped. Activity, such as eating, is not performed in relation to a total conceptual goal but becomes a reaction of a compulsive or repetitive nature in and of itself. Rasmussen (1968) pointed out that overweight persons have distorted or negative body images. This pattern also is one of the symptoms of perceptual impairment. Brown (1958) stated that overweight persons need to be helped to achieve a body image that is "slender, safe and secure" (p. 457). Without this help he believes persons cannot satisfactorily lose and maintain weight loss. Finally, evidence indicates that although supportive counseling help is necessary in obesity treatment, other treatment components are needed.

The treatment of weight control has been found in this and other research to be complex. Bruch (1963) stated that obesity is a symptom of a multiple interaction of various factors, only a

few of which thus far have been recognized. Treatment of learning impaired persons has similarly been found to be complex. Emphases are placed on either planned, structured, symptom alleviation procedures, or a process oriented treatment of underlying causes, or on a combination of these two approaches. In some types of physically related problems, such as stuttering, treatment has centered on either symptom control or management help with underlying causes. Also a process involving both help with the symptom and counseling procedures may be used. Obese persons might similarly benefit from a more comprehensive, combined treatment of external physical symptoms and internal causation.

Previous research has indicated a high correlation between body concept and self-concept. Current group therapy approaches, such as those at Esalen, are hypothesizing that physical touch is necessary in certain types of therapy procedures. Many obese persons express extreme insecurity and fear of rejection in differing forms of physical contact with others. Obese females also are frequently passive in the expression of most forms of physical intimacy with the opposite sex. Physical touching is also a controversial subject in education. Yet, serious question needs to be given as to whether persons can change body concepts by just talking about themselves. Many educators believe that students in our schools need to be physically touched or held, such as experiencing a warm arm around them. They find it difficult, however, to express this warmth, and many students are also hesitant in responding.

There is need for further research to test direct forms of body

concept therapy related to body concept awareness, physical expression of warmth and touching. Important concepts include the communication and sharing of new physical feeling tones and awareness experienced. Therapy should consider new emphasis on body concept change and treat self-concept improvement as an outgrowth of this process. Investigation in this area is recommended as a significant new treatment approach for the obese--along with the more traditional types of help offered.

It is hoped that this study has provided information and findings for other researchers that may lead to new directions and new answers in providing help to the overweight person.

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APPENDICES

APPENDIX A

THE WAITE DIETARY PLAN



To A Prospective Weight Loser - -

This food program offers an exciting new way to lose weight and keep it off - a plan which provides a well-balanced, nutritious way of eating. You should not go hungry; neither should you need any dietary supplements.

Most people approach their problem of overweight with just the thought of taking off pounds. Yet efforts at dieting have proven unsuccessful for large numbers -- attempts which have resulted in temporarily at best removing a few pounds which later are put back on, frequently with a few extra added.

This plan will work. It will help you to re-educate your eating habits, not only to lose weight but to keep it off. To be successful, begin with the idea of losing weight gradually - - a pound or pound and a half average per week is satisfactory. It is most important that you accurately follow the program. Do not try to change it in any way, and be sure to eat all that is required of you in three complete meals each day.

Here are a few guides to help you:

- (1) Use the tools provided. The food scale, in particular, is important in weighing your meat, fish and poultry after cooking.
- (a) Your weight (with shoes and heavy garments removed) should be recorded on the same day each week and the graph completed. Do not be alarmed should you lose no weight for a week or two in a row, or even gain weight. Our bodies have to re-adjust and plateaus frequently occur. Just remain patient, continue on the program, and the weight loss will resume again.
- (3) Determine your goal weight from the chart provided. For many people, the goal weight will be the maximum you will want to weigh. An additional loss of 5 or more pounds will bring you to a trim weight, and provide you with a few pounds leeway within which to stay.
- (4) Learn to use new recipes you like - - varying your menu within the allowed quantities of foods.
- (5) Check with your doctor on any medical questions which may arise.
- (6) Finally, if at all possible, work on this program with another person - - join a neighbor, a friend or another member of your family. People working together help each other.

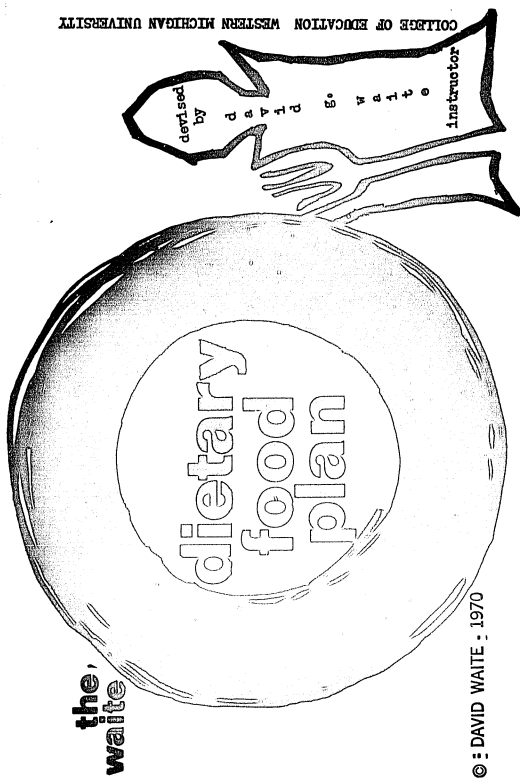
Have confidence in this plan. It is undergoing research with students at Western Michigan University with the aim of improving it continually.

Having personally lost over 80 pounds from my weight 5 years ago, I join with you in the effort to harness and control a problem that many of us share. It can be done. Good luck to you in your effort.

Sincerely,

Dave Waite

David G. Waite, Instructor
College of Education
Western Michigan University



(Dietary Plan - continued)

AS YOU UNDERTAKE THIS DIETARY FOOD PROGRAM --

1. You are not just going on another diet. You are planning a new way of eating -- a basic plan you will need to follow the rest of your life.
2. This food plan is aimed at helping you establish new eating habits.
Be satisfied with a moderate, gradual weight loss.
3. You will lose weight more easily if you communicate. People working together sharing frustrations and problems help to overcome them.
4. This program is well-balanced nutritionally and gives you a good choice and variety of foods. It should be followed accurately. Eat everything required -- neither more nor less. And eat 3 complete meals each day.
5. It is recommended that you consult your doctor before beginning this or any weight reduction program. Also you may feel more secure with his approval.

(Dietary Plan - continued)

BASIC FOOD PLAN

Beverages

The following beverages are used as described:

Milk - you must have daily 2 8 oz. glasses of skim milk (powdered or fresh), buttermilk, or 1 8 oz. glass evaporated skim milk.

Coffee or tea - unlimited (without sugar or cream).

Low calory drinks - carbonated or plain. You may have 18 calories per day.

PROGRAM OUTLINE

- - - -

BEVERAGES

(Dietary Plan - continued)

Seasonings, Flavorings & Special Foods

The following may be used as desired:

All seasonings and spices - including mustard, soy sauce, vinegar,
salt, pepper, paprika, cinnamon, garlic, mint, nutmeg, vanilla,
onion flakes.

Unflavored gelatin

Bouillon or fat-free broth

Artificial sweeteners - liquid, powdered or pill form

Cranberries or rhubarb (artificially sweetened)

Lemon or lime - fresh, frozen or concentrated

The following are special bonus foods - if desired:

Low calory commercial salad dressings - 2 tbs each day

Ketchup - 2 tbs each day

Chewing gum (except candy-coated) - 4 pkgs. each day

Tomato juice - 8 ozs. each day

(Dietary Plan - continued)

Vegetables

Most vegetables may be eaten as desired any time of the day if prepared without fats or salad oil dressings. These include:

asparagus	Chinese vegetables	radishes
bean sprouts	cucumbers - pickles*	sauerkraut
broccoli	greens - all kinds	string beans
cabbage	lettuce	summer squash
cauliflower	mushrooms	tomatoes*
celery	peppers	zucchini

*Eat sour or dill pickles only. Limit tomatoes to 1 per meal.

One of the following vegetables may be eaten once a day -- either at lunch or supper. Limit yourself to a 1/2 cup serving:

beets	peas	turnips
carrots	pumpkin	winter squash
onions		

The following three vegetables should not be eaten - corn, lima beans and sweet potatoes.

SEASONINGS, FLAVORINGS & SPECIAL FOODS

- - - -

VEGETABLES

(Dietary Plan - continued)

Breads, Potato & Cereal

You must have 1 slice of bread* each day - either at breakfast or at lunch.
Use either enriched white, rye, cracked or whole wheat or stone ground.
(NO muffins, biscuits, hot dog or hamburg rolls.)

In addition - to be eaten any time of the day - choose:

bread - one additional slice

or

cereal - 1/2 cup cooked cereal or
3/4 cup - any flaked or puffed (not pre-sweetened) cold cereal

or

potato - 1 small (4 oz.) baked or boiled white potato.

* Men must have 3 slices of bread daily plus their optional choice of bread, cereal or potato. These should be divided between the three meals.

(Dietary Plan - continued)

Fruits

You must have 3 fruits* daily - preferably fresh or unsweetened frozen.
If canned, remove syrup. Choose from the following lists: (One citrus
fruit or tomato or tomato juice should be eaten daily for Vitamin C.)

One Fruit Equals

<u>1</u>	<u>1/2 Cup (Unsweetened)</u>	<u>2</u>	<u>1/2</u>
apple	applesauce	apricots	banana**
pear	blackberries	plums	cantaloupe
peach	blueberries		grapefruit
tangerine	pineapple		
orange	strawberries		
	grapefruit juice		
	orange juice		

* Men must have 5 fruits daily.

** Banana may be chosen once only each day.

Do not eat raisins, figs, dates, other dried fruits, cherries or watermelon.

BREADS, POTATO & CEREAL

- - - -

FRUITS

(Dietary Plan - continued)

Meat, Fish, Poultry, Cheese & Eggs

Your daily food plan must include from this food group 1 choice from each of the lists below:

Breakfast

fish - 2 oz.
eggs - 1
hard cheese - 2 oz.
cottage cheese - 1/2 cup

Lunch*

meat - 3 oz.
poultry - 3 oz.
fish - 3 oz.
eggs - 2
hard cheese - 3 oz.
cottage cheese - 2/3 cup

Supper*

meat - 5 oz.
fish - 5 oz.
poultry - 5 oz.

The 14 lunches and suppers each week should include:

- 4 or more fish meals
- 4 meat meals (includes 1 pork or ham meal each week if desired)
- 6 meals of either eggs, cheese, poultry, veal, liver or more fish.

* Men's portions of meat, fish and poultry should have a cooked weight of 4 oz. for lunch; 6 oz. for supper.

(Dietary Plan - continued)

Meat, Fish, Poultry, Cheese & Eggs (Continued)

Eggs and cheese are eaten at breakfast and lunch only. Eat 4 eggs minimum, 7 maximum each week.

Meat, fish or poultry should be weighed after having been baked, broiled or boiled and all visible fat, skin or bones removed.

Meat includes steak, roasts, ground beef, or all beef hot dogs.

Pork or ham may be eaten once a week only as a meat meal.

Liver is recommended once a week and should be eaten twice a month.

The following foods should not be eaten: luncheon meats (cold cuts), bacon, tongue, corned beef, chipped beef, sardines, and all fried or smoked foods.

MEAT, FISH, POULTRY, CHEESE & EGGS

(Dietary Plan - continued)

Goodbyes

For now say goodbye to the following:

Alcoholic beverages
 (beer, wine, liquor)
Bacon
Butter
Cake - cookies - pastries
Candy - chocolate
Crackers - pretzels
Corn - sweet potatoes
Cream - cream soups
Cream cheese - processed
 cheese foods
Fried or smoked foods
Gravies
Ices - ice cream

Jams - jellies - honey
Lima beans - rice
Mayonnaise
Nuts
Oil - regular salad dressings
Pancakes - waffles
Peanut butter
Rolls - muffins - biscuits
Popcorn
Sardines
Spaghetti - macaroni
Sugar
Syrups

(Dietary Plan - continued)

Sample Recipes & Eating Suggestions

The following are suggestions for making your food program more enjoyable and satisfying.

- . Drinking coffee - especially at end of meals - cuts appetite.
- . Cinnamon mixed with powdered sugar substitute is excellent sprinkled on toast, baked apples, etc.
- . Milk shakes. Put 8 oz. skim milk in blender, adding frozen, unsweetened blueberries, blackberries or strawberries to fill blender to 12 oz. Add artificial sweetener and blend. Also blend 12 oz. of low calory soda with 1/4 to 1/3 cup skim milk powder. Add crushed ice cubes if needed.
- . Baked apples. Pour low calory soda over cored, baking apples. Bake at 350 degrees 1 to 1 1/2 hours. Add buttermilk (optional) and sprinkle with cinnamon - powdered sugar substitute mixture.
- . French toast. Soak bread in well-mixed egg. Use teflon frying pan. Sprinkle on cinnamon-sugar substitute mixture.
- . Tuna deluxe. Place 2 oz. tuna fish on bread. Add drained sauerkraut and place 1 oz. American or swiss cheese on top. Broil with oven door slightly open until cheese melts.

GOODEYES

- - - -

SAMPLE RECIPES & EATING SUGGESTIONS

(Dietary Plan - continued)

MENU PLAN*

Breakfast

Choice from beverage list
1 slice of bread or toast
Choice of fish, cheese or egg
Fruit choice, if desired

Lunch

Choice of meat, fish, poultry,
cheese or eggs
Choice(s) from vegetable list
1 slice of bread or toast
Choice from beverage list

Supper

Choice of meat, fish or poultry
Choice(s) from vegetable list
Choice from fruit list, if desired
Choice from beverage list

Taken During Day When Desired

2 - 8 oz. glasses of milk
Choice of extra bread - cereal -
potato (see section on bread)
Salad dressing - 2 tbs. low calorie
(optional)
Tomato juice - 8 oz. (optional)
3 choices from fruit list
All the vegetables you want (See
list for exceptions)

- * The plan for men is identical to that for women with three exceptions:
- (1) Men should eat 3 slices of bread daily plus their optional choice of bread, cereal or potato
 - (2) Have 5 fruit selections daily, and (3) have 4 oz. and 6 oz. cooked weight servings of meat, fish or poultry for lunch and supper.

Daily Food Record Chart

This chart is designed to help you keep track of your daily and weekly requirements by writing in or checking the space beside food choices or requirements with each meal.

COLLEGE OF EDUCATION
WESTERN MICHIGAN UNIVERSITY



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GOAL WEIGHT CHART

(With Shoes and Heavy Garments Removed)



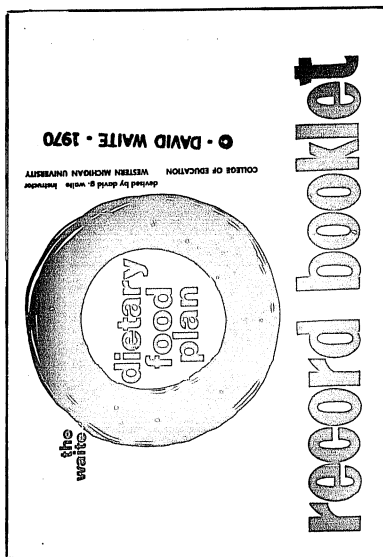
<u>Height</u>	<u>Women's</u> <u>Goal Wt.</u>	<u>Men's</u> ** <u>Goal Wt.</u>	<u>Height</u>	<u>Women's</u> <u>Goal Wt.</u>	<u>Men's</u> <u>Goal Wt.</u>
4' 10"	111	---	5' 8"	147	154
4' 11"	114	---	5' 9"	151	159
5' 0"	117	---	5' 10"	156	164
5' 1"	120	127	5' 11"	161	169
5' 2"	123	130	6' 0"	166	174
5' 3"	127	133	6' 1"	---	179
5' 4"	130	137	6' 2"	---	185
5' 5"	134	140	6' 3"	---	192
5' 6"	138	145	6' 4"	---	199
5' 7"	142	149	6' 5"	---	206

* Girls only, between 18 and 25, should subtract 1 pound for each year under 25 up to a total of 7 pounds. For each year of age under 18, subtract an additional 2 pounds.

** Males only, between 18 and 25, should subtract 1.5 pounds for each year under 25 up to a total of 10½ pounds. For each year of age under 18, subtract an additional 3 pounds. (Round off fraction of numbers to the next highest whole number - i.e., 123½, consider as 124.)

The Waite - Dietary Food Program

STUDENT INFORMATION CARD				loss or total		loss or total				
Class	Class Group	Wt. Group	date	wt.	gain	loss	date	wt.	gain	loss
Ht. _____	Goal Wt. _____		0	_____	_____	_____	13	_____	_____	_____
Student's			1	_____	_____	_____	14	_____	_____	_____
Name _____	(Last first middle init)		2	_____	_____	_____	15	_____	_____	_____
Home address _____			3	_____	_____	_____	16	_____	_____	_____
_____ Phone _____			4	_____	_____	_____	17	_____	_____	_____
Local address _____			5	_____	_____	_____	18	_____	_____	_____
Local phone _____ St. No. _____			6	_____	_____	_____	19	_____	_____	_____
Age _____ Date of Birth _____ Yr. in _____			7	_____	_____	_____	20	_____	_____	_____
College _____			8	_____	_____	_____	21	_____	_____	_____
Food prepared at dorm _____			9	_____	_____	_____	22	_____	_____	_____
Planning own meals _____			10	_____	_____	_____	23	_____	_____	_____
Comments _____			11	_____	_____	_____	24	_____	_____	_____
(Not to be filled in by student)			12	_____	_____	_____	25	_____	_____	_____
IAV Pre I _____ 2 _____ 3 _____										
IAV Post I _____ 2 _____ 3 _____										
Net. Chg I _____ 2 _____ 3 _____										



Record booklet (continued)
back cover

INSTRUCTIONS FOR RECORDING WEIGHT

On the other side of this page is a place on which to record weekly your weight, weight change for the present week, and total weight change to date.

On the inside cover is a weight record progress graph on which to plot this same information. Record your beginning weight in the box in the upper left-hand corner. To observe your progress, draw a line on the same day each week (chart covers 26 weeks) between the points which represent your weight change.

This graph will provide you a good visible picture of your progress.

(print name)

(address)

(phone)

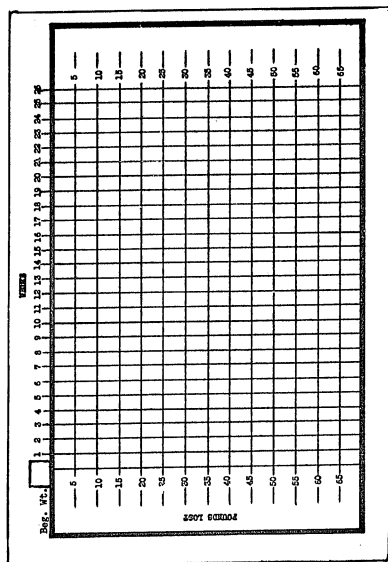
Record booklet (continued)

Inside back cover

WK	DATE	TODAY'S WT.	THIS WKS WT. CHANGE	WT. LOSS TO DATE	WK	DATE	TODAY'S WT.	THIS WKS WT. CHANGE	WT. LOSS TO DATE
0					13				
1					14				
2					15				
3					16				
4					17				
5					18				
6					19				
7					20				
8					21				
9					22				
10					23				
11					24				
12					25				

(SEE BACK COVER FOR INSTRUCTIONS)

Record booklet (continued)
Inside front cover



APPENDIX B

STUDENT REGISTRATION MATERIALS

TREATMENT GROUPS PROCEDURES

AND SELF-CONCEPT TEST

WESTERN MICHIGAN UNIVERSITY

COLLEGE OF EDUCATION
Department of Teacher Education

KALAMAZOO, MICHIGAN
49001

To All Female Students -

Do You Need to lose excess pounds? This fall, in conjunction with the Women's Physical Education Department, we are making available to you, an opportunity to enroll in a new weight reduction program included as a part of a few special physical education classes.

Each class will include a well-balanced, nutritious food program designed to help you eat well, yet lose weight. It can be followed by girls living either in dormitories or off-campus. You will receive full credit for one of the four required physical education courses you must take.

Do You Qualify? Enrollment will be limited. To qualify, you must first look for your height (approximate), then see whether your weight fits one of the three groups, A, B, or C.

Height	Group A	Group B	Group C
4' 10"	120-130	131-150	Over 150
4' 11"	123-133	134-153	153
5' 0"	125-135	136-155	155
5' 1"	128-138	139-158	158
5' 2"	131-141	142-161	161
5' 3"	134-144	145-164	164
5' 4"	138-148	149-168	168
5' 5"	141-151	152-171	171
5' 6"	145-155	156-175	175
5' 7"	149-159	160-179	179
5' 8"	153-163	164-183	183
5' 9"	157-167	168-187	187
5' 10"	161-171	172-191	191
5' 11"	166-176	177-196	196
6' 0"	170-180	181-200	200

Your present approximate weight must fit one of the three weight groups, to enroll. Girls with very large amounts of weight to lose should also feel free to register. Your privacy will be respected, and this program will provide all of you an opportunity to start the new school year in a constructive, positive way that may help you to a more enjoyable and rewarding experience here at Western.

This Is What You Do. If you qualify, first determine your group - A, B, or C. When you see your Academic Counselor just prior to registration, tell him you want to be in one of the special Women's Physical Education classes which includes the weight reduction program. Tell him you are in Group A, B, or C. (You don't have to mention your weight.) Be sure he takes your name and group. You will be given a special enrollment card, called a "C" card, which you take with you to registration. This will guarantee you space in the section your counselor assigns you.

Space is definitely limited. New students and transfer students are being given first opportunity. I will look forward to meeting with you in what is hoped will be an important step in your life here at Western.

Sincerely,

David G. Waite

David G. Waite
Teacher Education Department.

WESTERN MICHIGAN UNIVERSITY

COLLEGE OF EDUCATION
Department of Teacher Education

KALAMAZOO, MICHIGAN
49001

To Academic Counselors,

Girls needing to lose excess weight will receive a copy of the attached letter as they arrive for orientation. Again, just before they come to see you on the final morning of their orientation, a reminder announcement will be read. Please read this letter carefully. Students may request the special Physical Education sections, but some may be reluctant and need your suggestions on the matter.

You will need to record the name of the student, Physical Education section you assign her to, and indicate the classification -- A, B, or C -- she falls into according to her weight. Each group should have approximately the same number of A, B, and C students.

	Group 1	Group 2	Group 3	Group 4			
	Phys. Ed. 124 FA 25 "C" Cards	Phys. Ed. 124 FB 25 "C" Cards	Phys. Ed. 128 AP 25 "C" Cards	Phys. Ed. 111 CA 7 "C" Cards	Phys. Ed. 111 FA 7 "C" Cards	Phys. Ed. 111 GA 7 "C" Cards	Phys. Ed. 111 HA 7 "C" Cards
Weight Group A							
Weight Group B							
Weight Group C							

For example, if Mary Jones is 5' 6" and weighs 160, she is in Weight Group B. With an aim at keeping equal numbers in each of the 4 Physical Education groups, she is placed. (Group 4 has 4 separate class sections but should be treated as the other groups.)

It will be important to coordinate effort between counselors so that your total group placements can be balanced out, and can also include transfer students who will be included in this program.

Sincere thanks for your cooperation on this new and important program.

David G. Waite, Teacher Education Department

WEIGHT REDUCTION PROGRAM SCHEDULE

	<u>Group 1</u>		<u>Group 2</u>		<u>Group 3</u>		<u>Group 4</u>			
	<u>Phys. Ed.</u>		<u>Phys. Ed.</u>		<u>Phys. Ed.</u>		<u>Phys. Ed.</u>	<u>Phys. Ed.</u>	<u>Phys. Ed.</u>	<u>Phys. Ed.</u>
<u>Weight Group A</u>	25 "C" Cards		25 "C" Cards		25 "C" Cards		7 "C"Cards	7 "C"Cards	7 "C"Cards	7 "C"Cards
							7 "C"Cards	7 "C"Cards	7 "C"Cards	7 "C"Cards
							7 "C"Cards	7 "C"Cards	7 "C"Cards	7 "C"Cards
<u>Weight Group B</u>										
<u>Weight Group C</u>										

Dear Student,

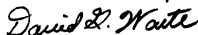
I am sorry to inform you that the weight reduction program for which you indicated interest as a part of your physical education class, will not be available to you this fall semester.

Being a new program at Western, we are using research procedures in randomly selecting final group participants from each total group of students who are volunteering. Your name was not in the final selection list from the first volunteer group.

I do hope you will remain in the Physical Education class in which you enrolled. It is an excellent choice, and I am sure you will benefit from it.

Thank you for having expressed interest in this experimental new program. Perhaps at a later time, it may again be available to you.

Sincerely,



David G. Waite
Teacher Education Department

GROUP PROCEDURE PLANNING CHART

Treatment and Control Groups

Week	<u>Food Program</u>	<u>Food Program & Weekly Weigh-in</u>	<u>Complete Program</u>	<u>Control Groups</u>
	M-W 4:10-5:00 <u>Group 1</u> 128AR Phys. Ed. Loren Davis	M-W 6:30-7:20 <u>Group 2</u> 128KA Gen Phys. Ed. Loren Davis	T-Th 4:10-5:00 <u>Group 3</u> 128IA Gen Phys Ed. D. Waite - Grad Asst.	Beg. Swimming <u>Group 4</u> Phys. Ed. 111CA, FA, GA, & WA
1				
2	Weigh Food & test Prog. (Sep 7) (Sep 9)	Weigh Food & test Prog. (Sep 7) (Sep 9)	Weigh Food & test Prog. (Sep 8) (Sep 10)	Weigh * & test (Sep 8) (Sep 10)
3		Weigh**	Lecture***	
4		Weigh	Lecture	CA T-Th 10:10-11:20
5		Weigh	Lecture	Kanzler FA T-Th
6		Weigh	Lecture	1:10-2:20 GA T-Th
7		Weigh	Lecture	2:10-3:20 HA T-Th
8		Weigh	Lecture	3:10-4:20 FA,GA,HA - Large
9		Weigh	Lecture	
10		Weigh	Lecture	
11		Weigh	Lecture	
12		Weigh	Lecture	
13		Weigh	Lecture	
14	Weigh & test (Dec 7) *	Weigh & test (Dec 7) *	Weigh & test (Dec 8) *	Weigh & test (Dec 8) *
15				

* Those missed on first class meeting of week will be picked up at second meeting

** Weekly weigh-in done by researcher and assistant, can be done using two scales, with little or no interruption of class.

*** Refers to complete program which will take one of two class periods each week.

BILLS' INDEX OF ADJUSTMENT AND VALUES (IAV)
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DIRECTIONS
(Adult Form)

This device is a way of helping you to state some of your beliefs about yourself. It tells nothing more than what you want it to say -- there are no hidden scores or tricks. It will have value only if you are careful and do your best to give an accurate description of yourself.

There is a need for each of us to know more about ourselves, but seldom do we have an opportunity to look at ourselves as we are or as we would like to be. On the following page is a list of terms that to a certain degree describe people. Take each term separately and apply it to yourself by completing the following sentence:

I AM A (AN) _____ PERSON.

The first word in the list is academic, so you would substitute this term in the above sentence. It would read -- I am an academic person.

Then decide HOW MUCH OF THE TIME this statement is like you, i.e., is typical or characteristic of you as an individual, and rate yourself on a scale from one to five according to the following key.

1. Seldom, is this like me.
2. Occasionally, this is like me.
3. About half of the time, this is like me.
4. A good deal of the time, this is like me.
5. Most of the time, this is like me.

Select the number beside the phrase that tells how much of the time the statement is like you and insert it in Column I of the next page.

EXAMPLE: Beside the term ACADEMIC, number two is inserted to indicate that -- occasionally, I am an academic person.

Now go to Column II. Use one of the statements given below to tell HOW YOU FEEL about yourself as described in Column I.

1. I very much dislike being as I am in this respect.
2. I dislike being as I am in this respect.
3. I neither dislike being as I am nor like being as I am in this respect.
4. I like being as I am in this respect.
5. I like very much being as I am in this respect.

You will select the number beside the statement that tells how you feel about the way you are and insert the number in Column II.

EXAMPLE: In Column II beside the term ACADEMIC, number one is inserted to indicate that I dislike very much being as I am in respect to the term, academic. Note that being as I am always refers to the way you described yourself in Column I.

Finally, go to Column III; using the same term, complete the following sentence:

I WOULD LIKE TO BE A (AN) _____ PERSON.

Then decide HOW MUCH OF THE TIME you would like this trait to be characteristic of you and rate yourself on the following five point scale.

1. Seldom, would I like this to be me.
2. Occasionally, I would like this to be me.
3. About half of the time, I would like this to be me.
4. A good deal of the time, I would like this to be me.
5. Most of the time, I would like this to be me.

You will select the number beside the phrase that tells how much of the time you would like to be this kind of a person and insert the number in Column III.

EXAMPLE: In Column III beside the term ACADEMIC, number five is inserted to indicate that most of the time, I would like to be this kind of person.

Start with the word ACCEPTABLE and fill in Column I, II, and III before going on to the next word. There is no time limit. Be honest with yourself so that your description will be a true measure of how you look at yourself.

BILLS' INDEX OF ADJUSTMENT AND VALUES (IAV)

ANSWER SHEET

	I	II	III		I	II	III
a. academic	_____	_____	_____	25. meddlesome	_____	_____	_____
1. acceptable	_____	_____	_____	26. merry	_____	_____	_____
2. accurate	_____	_____	_____	27. mature	_____	_____	_____
3. alert	_____	_____	_____	28. nervous	_____	_____	_____
4. ambitious	_____	_____	_____	29. normal	_____	_____	_____
5. annoying	_____	_____	_____	30. optimistic	_____	_____	_____
6. busy	_____	_____	_____	31. poised	_____	_____	_____
7. calm	_____	_____	_____	32. purposeful	_____	_____	_____
8. charming	_____	_____	_____	33. reasonable	_____	_____	_____
9. clever	_____	_____	_____	34. reckless	_____	_____	_____
10. competent	_____	_____	_____	35. responsible	_____	_____	_____
11. confident	_____	_____	_____	36. sarcastic	_____	_____	_____
12. considerate	_____	_____	_____	37. sincere	_____	_____	_____
13. cruel	_____	_____	_____	38. stable	_____	_____	_____
14. democratic	_____	_____	_____	39. studious	_____	_____	_____
15. dependable	_____	_____	_____	40. successful	_____	_____	_____
16. economical	_____	_____	_____	41. stubborn	_____	_____	_____
17. efficient	_____	_____	_____	42. tactful	_____	_____	_____
18. fearful	_____	_____	_____	43. teachable	_____	_____	_____
19. friendly	_____	_____	_____	44. useful	_____	_____	_____
20. fashionable	_____	_____	_____	45. worthy	_____	_____	_____
21. helpful	_____	_____	_____	46. broad-minded	_____	_____	_____
22. intellectual	_____	_____	_____	47. businesslike	_____	_____	_____
23. kind	_____	_____	_____	48. competitive	_____	_____	_____
24. logical	_____	_____	_____	49. fault-finding	_____	_____	_____

GENERAL PHYSICAL EDUCATION 128:IA QUESTIONNAIRE

(Group 3)

1. If you have lost weight, what has been most helpful to you in doing so? Rate the following in order of importance (1, 2, 3...)

_____ Diet

_____ Exercise

_____ Class meetings

_____ Weighing - in

_____ Other factors (Explain) _____

2. What two things on this diet are the easiest to follow? _____

3. What two things on this diet are the hardest to follow? _____

4. On which day is it the hardest for you to follow this diet?
Circle.

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

5. If an optional one hour period of individual or group counseling sessions were made available to you as part of this program, would you choose to become involved? Yes or No. Comments: _____

SUMMARY OF RESPONSES TO
GENERAL PHYSICAL EDUCATION (GROUP 3) QUESTIONNAIRE

The responses to the questionnaire administered to the complete weight control class are described below. Answers to questions 2 and 3 were so general that they have been omitted:

1. If you have lost weight, what has been most helpful to you in doing so? Rate the following in order of importance (1, 2, 3.)

Of the 20 subjects in Treatment Group 3 who responded to the questionnaire, the mean response for each item, based on the scale range of 1 (most important) to 5 (least important) was:

<u>2.18</u> Diet	<u>2.80</u> Exercise	<u>4.08</u> Other factors
<u>2.58</u> Weighing-in	<u>3.22</u> Class meetings	

4. On which day is it the hardest for you to follow this diet? Circle.

Sunday	Monday	Tuesday	Wednesday
Thursday	Friday	Saturday	

In response to Question 4, of the 11 students giving single answers, 6 chose Sunday and 5 chose Saturday. No other days were indicated. Of the students circling several responses, Saturdays and Sundays accounted for most of the choices.

5. If an optional one-hour period of individual or group counseling sessions were made available to you as part of this program would you choose to become involved? Yes or No. Comments:

Nine voted yes, 8 voted no and 3 students did not answer.

The following comments were added to some responses:

"As I lose weight, I find my enthusiasm and willpower is getting hard to control because I feel like rewarding myself for a job well done."

"Gained weight this week and felt like I broke the faith. Never again. Talking really helps."

"In the regular class period no one really talks. It's like a bunch of individuals not a group working together. Group counseling would be good."

"I lovethis class and love coming and seeing my efforts pay off."