Male and female preferences regarding weight and weight reduction programs

MALE AND FEMALE PREFERENCES REGARDING WEIGHT AND WEIGHT REDUCTION PROGRAMS

by

Steven Wayne Dannenfelser

A Thesis Submitted to the Faculty of the

DEPARTMENT OF PSYCHOLOGY

In Partial Fulfillment of the Requirements
For the Degree of

MASTER OF ARTS

In the Graduate College

THE UNIVERSITY OF ARIZONA

1978

STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Steven W. Dannenfelser

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Louis Balch

P. Balch
Assistant Professor of Psychology

5-2-78

Date

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

Obesity remains to be one of the most prevalent health problems in the world today. Many different treatment approaches have been attempted, but most have proven to be unsatisfactory in either producing a significant weight loss or maintaining the weight loss that was achieved. Recently, investigators have attempted to apply the principles of behavior modification to the problem of obesity. These approaches, while not producing a totally satisfactory treatment program, have proven to be more effective than previous programs. Current work in this field has been directed towards distinguishing certain segments of the obese population who do best in these types of programs and in designing alternate programs for the remaining obese individuals.

The present study was undertaken to establish what, if any, differences exist between men and women in relation to their ideas regarding their weight and various weight reduction programs. In addition, the study was designed so as to provide an estimate of the incidence of obesity in a college population, as data in this area varies widely.

Significant sex related differences were found to occur in relation to the subject's ideas regarding their weight and their preferences for various types of weight reduction programs. These differences are discussed, as well as possible treatment program designs arising from these findings.

INTRODUCTION

Obesity has long posed a major health problem for millions of individuals. The incidence of obesity has reached such a level as to prompt the U.S. Public Health Service to label it as one of the most prevalent health problems in the United States today (U.S. Public Health Service, undated). Many different approaches have been put forth to deal with this problem, but as Stunkard and McLaren-Hume (1959) point out, most have failed to produce a program which resulted in individuals who had a significant weight loss which was maintained over a reasonable amount of time. Recently, investigators have attempted to apply the principles of behavior modification to the problem of obesity. While these approaches have failed to produce a totally satisfactory program, they do appear to work better than other programs which have been proposed (Abramson, 1973; Bellack, 1977; Hall and Hall, 1974; Leon, 1976). One method of improving these programs would be to design them on a more individual basis to reach segemnts of the obese population, rather than attempting to apply one program to all individuals. One natural distinction along these lines is by the sex of the individual.

While doing clinical work in behavioral weight reduction programs it was noted that very few, if any, men participated in these programs (Albright, dissertation in progress; Balch and Balch, 1976; Lindstrom, Balch, and Reese, 1976). Upon further examination of the more general literature dealing with treatment programs for obesity, this pattern was

also reported, with the number of women involved in weight reduction programs far exceeding the number of men (Leon, 1976; Stuart and Davis, 1972; Stunkard and McLaren-Hume, 1959). Several investigators have called for the examination of these sex differences in relation to treatment (Abramson, 1973; Harns, 1969), but little has been done along these lines.

What are the reasons behind the non-participation of men in weight reduction programs? It does not seem to be due to a greater number of overweight women, as the percentages of overweight men and overweight women are roughly the same during the adult years, with overweight men slightly outnumbering overweight women in the early adult years (Bray, 1973; Stuart and Davis, 1972; U.S. Public Health Service, 1965).

The purpose of the present study is twofold. The study first attempts to determine the incidence of obesity within a college population as figures regarding this vary widely (Bray, 1973). Second, and more importantly, the study attempts to examine some of the variables associated with weight and weight reduction programs in an attempt to provide clues useful in the design of weight reduction programs. If sex differences are found to occur in relation to attitude towards weight and weight reduction programs, they should be kept in mind when one designs new treatment programs for the obese individual.

LITERATURE REVIEW

The following is a review of the pertinent literature which suggest sex related differences with regard to weight and weight control methods. Many of the studies reported have been conducted with non-college adults, so that the various topics discussed below need to be examined with a college population to determine if they are relevant to weight reduction programs run there.

Obesity, Intelligence, and Social Class

Kreze, Zelina, Juhas, and Garbara (1974) investigated the relationship between intelligence, as measured by a "standard intelligence test", and the prevalence of obesity in a sample of 554 adults. Among women, there was a strong inverse relationship between obesity and intelligence, with 41% of the low I.Q. population being obese and only 11% of the high I.Q. group being classified as obese. For men, the trend was slightly different with the average I.Q. group having the highest percentage of obese individuals. The high I.Q. group again had the lowest prevalence of obesity.

The prevalence of obesity in relation to social class closely parallels the findings for intelligence. Using data collected from the Midtown Manhattan Study, which included data related to socioeconomic status as well as height and weight data, Moore, Stunkard, and Srole (1962) and Goldblatt, Moore, and Stunkard (1965) found that obesity and

socioeconomic status were more strongly related for women than for men. The same pattern appeared as for intelligence, with obesity being inversely related to social class for women with the middle class men having the highest prevalence of obesity. Similar results are reported for and English population by Silverstone, Gordon, and Stunkard (1969), Silverstone (1970), and Ashwell and Etchell (1974).

Both Goldblatt et al. (1965) and Silverstone et al. (1969) offer explanations for the lower prevalence of obesity within the lower social class males as well as the lower relationship of social class and obesity to males in general. Silverstone et al. (1969) point out that men in the lower social classes are more likely than men in the upper or middle social classes to be involved in physical labor and therefore probably get more exercise than their upper social class counterparts. Goldblatt et al. (1965) suggest that society places a greater importance on the physical appearance of women, especially upper class women, and hence they are more likely to watch their weight and attempt to keep it down.

Weight Awareness

Several studies have been conducted with adolescents regarding various aspects of their health. While the results of these studies may not be directly applicable to college or older adult populations, they may suggest attitudes which are carried on from adolescence. Deisher and Mills (1963) questioned 690 adolescents about their health worries. They report the largest group of individuals worried about their weight, twice as many girls as boys reporting concern. Huenemann, Hampton, Shapiro,

and Behnke (1966) conducted a similar study in which they questioned a group of boys and girls once a year, for a period of four years, regarding their health worries. They report that girls, on the whole, wanted to lose weight while the boys wanted to gain weight. They found no difference in the actual incidence of obesity between boys and girls. Dwyer (1973) postulates that the boys relate weight and physical prowess and hence want to gain weight. Girls, on the other hand, Dwyer (1973) postulates are becoming interested in their figures and hence want to maintain or reduce their weight. Further, Dwyer (1973) reports that almost all of the overweight girls in her study saw themselves as being overweight while only the most obese of the boys perceived themselves as being overweight. Taken together, these studies seem to indicate that 1) girls want to lose weight while boys want to gain weight, and 2) girls are more attuned to their weight than are boys.

Ashwell and Etchell (1974), who studied the attitudes of individuals towards their weight, report that within their sample of some 1000 individuals, overweight people were more accurate than underweight people in estimating their weight. Further, overweight women were reported to be more aware of their weight than were overweight men. In addition, they report that of the individuals who fell into the normal range of weight category, women were more likely than men to overestimate their weight. Silverstone (1968), who conducted a study of patients who came in to see a physician in London, reports that women were more likely than men to designate their weight as a problem and more eager to lose weight. Dwyer

and Mayer (1970) report findings from three public opinion polls which indicate that women are more concerned than men about their weight.

These studies, taken in conjunction with the studies with adolescents, would seem to indicate that women are more aware of their weight and view it as more of a problem than do men. This cannot be explained by a higher incidence of obesity for women as the incidence is roughly the same in both adolescent (Huenemann et al., 1966) and adult (U.S. Public Health Service, 1965) populations.

Previous Attempts to Lose Weight

Ashwell and Etchell (1974) report that two-fifths of their total sample of 1059 people had tried to lose weight at some time. When separated by sex they found that one-half of the women reported at least one prior attempt to lose weight while only one-quarter of the men reported such an attempt. They further report that of the men who had tried to lose weight, most were in the upper social class. There were no class related differences reported for the women. Dwyer and Mayer (1970) also found that women were more likely than men to have tried to lose weight.

Dwyer, Feldman, and Mayer (1973) speculate as to the reasons behind the greater number of attempts to lose weight by women. First, they suggest that weight deviations are more of a liability for women than for men. Second, weight related aspects of appearance are more intertwined with the self-concept for women. Third, heightened concern by women regarding their weight may be due to the fact that fat is more noticeable on them. Fourth, men may have the mistaken notion that weight loss will result in a loss of strength (much like the findings from the studies

with adolescents). Fifth, they suggest that women's fashions cater to the thin woman so that women tend to lose weight so that they can be in fashion. Ashwell and Etchell (1974) also suggest that women may have more social pressure to keep their weight low than do men.

Of those men who have tried to lose weight, most seem to do so easier than women involved in the same group (Harns, 1969; Murray, 1975; Murray, Davidoff, and Harrington, 1975; Stunkard and McLaren-Hume, 1959). This may be due, as Harns (1969, p. 265) suggests, to the fact "commitment to a group weight reduction program represents a greater degree of motivation for men than for women . . . ."

Preference for Type of Weight Reduction Program

Data in this area is scarce. Oscancova and Hejda (1970) report that from their survey of 537 Czechoslovokian subjects they found that men tended to try to keep their weight down through some form of exercise, while women were more apt to use some form of dieting to control their weight.

Personality Factors

Several investigators have looked for personality differences that would distinguish the obese from the non-obese individual. These studies have met with only limited success. Of the studies reporting differences (Karpowitz and Zeis, 1975; Nathan, 1973; Wunderlich, Johnson, and Ball, 1973) all report that there were no significant sex differences.

Several other studies have failed to document personailty differences, either when the data was analyzed with both men and women or

when it was separated by sex (Gormanous and Lowe, 1975; Wunderlich, 1974).

It is safe to say that Stunkard and Mendelson's (1961) statement still holds today. They write that if personality differences do occur between obese and non-obese individuals they probably occur in only a minority of the obese population. Further, at this time there exists no evidence to suggest that these differences, if indeed they do exist, are sex specific.

PRESENT RESEARCH

Purpose

The purpose of the present study was twofold. The study first attempted to determine the incidence of obesity within a college population as figures regarding this vary widely (Bray, 1973). Second, and more importantly, the study attempted to examine some of the variables associated with weight and weight reduction programs in an attempt to provide clues useful in the design of weight reduction programs. Several of the variables reported to show sex differences within adult populations were examined within a college population to see if they could account for the lack of male involvement in present weight reduction programs. These variables included awareness of present weight, number of previous attempts to lose weight and methods used, preferences for the type of weight reduction programs, outside influences on ideas about desirable weight, and importance of weight to life goals.

Instrument

Data was collected by means of a questionnaire designed specifically for this project. Responses from each subject were obtained in each of eight areas, five of which had been shown to show sex related differences with an older adult population. The eight areas are: 1) educational level and/or expected educational level (suggested by the Kreze et al., 1974 research); 2) socioeconomic class (suggested by the Moore

et al., 1962 and Goldblatt et al. 1965 research); 3) physical activity level; 4) awareness of present weight (suggested by the Ashwell and Etchell, 1974 research); 5) previous attempts to lose weight (also suggested by the Ashwell and Etchell, 1974 research); 6) preference for type of weight reduction program (suggested by the Oscancova and Hejda, 1970 research); 7)outside influences on ideas about desirable weight; and 8) importance of weight in relation to life goals. A copy of the questionnaire is contained in Appendix A.

Methods

The subjects were undergraduate volunteers from an introductory psychology course. A total of 398 questionnaires were completed by 166 men and 232 women. This represented some 90% of the total class enrollment. The subjects ranged in age from 16 to 57 with a mean age of 19.7 years and in class standing from freshman to graduate student with a mode class standing of freshman. For purposes of data analysis, these groups were further divided into normal weight and overweight groups (see Table I). Subjects were placed in the overweight category if their weight exceeded the recommended weight for height table (U.S. Public Health Service, 1966) by more than 15%. This division resulted in four groups--normal weight males (NM), normal weight females (NF), overweight males (OM), and overweight females (OF). The number of subjects in each group were 134, 193, 32, and 39 respectively. This division reveals that 18% of the population fell into the overweight category, with 19% of the men and 17% of the women doing so.

Table I. Distribution of sample population by sex and weight

Weight	Male	Female
Normal	N= 134	N= 193
	34%[a]	48%
	81%[b]	83%
Over	N= 32	N= 39
	8%	10%
	19%	17%

[a]Percentage of total sample population
[b]Percentage of male (or female) sample

A brief explanation of the study was given to each subject and after obtaining their consent to participate, each was asked to complete the questionnaire. Upon completion of the questionnaire each subject's height and weight were measured and recorded. Any further questions that the subjects may have had regarding the study were then answered.

The questionnaires were initially separated into male and female categories and each question was analyzed with the appropriate statistic (either chi-square or the t-test) to determine if there were significant sex differences between any of the responses to the questionnaire items. The data was then further divided into normal weight male versus normal weight female and overweight male versus overweight female categories and the above statistics repeated for each question.

Socioeconomic class was determined by use of the Hollingshead (1957) scale of social position.

Results

The basic results within each category are described below. For a complete listing of the frequencies of responses for each question see Appendix B.

Educational and Social Variables

Significantly more normal weight men (53%) than normal weight women (26%) reported a class standing beyond that of freshman. In addition, significantly more normal weight men (51%) than normal weight women (35%) reported an intention to pursue an advanced degree. There were no significant differences between overweight men and overweight women on either of these variables (exact frequencies of responses can be found in Appendix B, question number three).

There were no significant differences between men and women in social class standing. The subjects ranged from the lowest category (V) to the highest (I) with the highest percentage (49%) of the individuals falling into the upper-middle class categories (I and II). Further, there were no differences in the prevalence of obesity within each social class. Table II presents the chi-square and significance level values for each of these variables.

Physical Activity

In general, men reported a higher level of activity than did the women. Although both groups reported activity levels ranging from light to heavy, a larger percentage of men than women rated their activity level as heavy (25% to 7%). The differences between normal weight men and

Table II. Educational and social variables

	Comparison					
	M vs F[a]		NM vs NF[b]		OM vs OF[c]	
Variable	X^2	p	X^2	p	X^2	p
Present educational level	29.0	0.001	24.8	0.001	6.33	n.s.[d]
Anticipated educational level	18.4	0.001	20.1	0.001	1.24	n.s.
Socioeconomic class	5.07	n.s.	1.95	n.s.	2.66	n.s.

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

[d]Non-significant

normal weight women as well as those between overweight men and overweight women. Table III presents the chi-square and significance level values for this section.

Table III. Physical activity

	Comparison					
	M vs F[a]		NM vs NF[b]		OM vs OF[c]	
Variable	X^2	p	X^2	p	X^2	p
Level of physical activity	24.9	0.001	16.1	0.001	11.6	0.005

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

Awareness of Present Weight

There was a significant difference between the responses of men and women on a number of items contained in question fourteen which dealt with various cues for weight. In general, women reported that when involved in situations similar to those described in this question, they were almost always made aware of their weight. The men, on the other hand, reported that when involved in situations similar to those in the question, they were only sometimes made aware of their weight. The exact frequency of response by category and sex may be found in Appendix B, question fourteen. The one variable which did not show sex related differences was the degree to which physical cues called attention to the individual's weight. Both men and women reported that this variable almost always called attention to their weight.

More specifically, men were less accurate in correctly estimating their weight (men overestimated their weight by an average of two pounds while women underestimated their weight by an average of only 0.03 pounds). In addition, the men reported that they would allow a much greater weight gain (ten pounds) before dieting than would the women (two pounds). The chi-square, t-test, and significance level values are presented for this section in Table IV.

Previous Attempts to Lose Weight

A significantly higher percentage of women than men reported at least one attempt to lose weight (85% to 47% respectively). In addition, of the 276 subjects (69% of the total population) who had tried to lose weight, women reported many more attempts (women reported an average of

Table IV. Awareness of present weight

	Comparison					
	M vs F[a]		NM vs NF[b]		OM vs OF[c]	
Variable	X^2	p	X^2	p	X^2	p
Other's remarks	16.6	0.001	10.5	0.010	7.19	0.050
Other's reactions	14.1	0.001	8.14	0.020	8.70	0.005
Effect on relationships	26.1	0.001	18.0	0.001	11.5	0.001
Weighing self	28.8	0.001	26.0	0.001	4.36	0.050
Looking in mirror	43.5	0.001	41.1	0.001	3.40	n.s.[d]
Physical symptoms	0.46	n.s.	0.44	n.s.	0.92	n.s.
Fit of clothes	67.9	0.001	61.0	0.001	7.68	0.050
General uncomfortable feeling	48.9	0.001	49.6	0.001	3.52	n.s.
	t		t		t	
Estimate of weight	4.08	0.001	3.41	0.001	2.27	0.050
Permissable weight gain	9.71	0.001	10.2	0.001	2.53	0.020

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

[d]Non-significant

between four and seven such attempts while men reported an average of between two and three previous attempts). These differences were significant both between the normal weight men and normal weight women as well as between the overweight men and overweight women. Overall effectiveness, as perceived by the subjects, did not differ between men and women with most individuals rating their previous attempts at weight loss as successful. There were no differences as to the methods used in the weight reduction attempts. The most frequently used method of weight control was reported to be some form of an exercise program in conjunction with a restriction of caloric intake. Table V presents the specific chi-square and significance level values for this section.

Table V. Previous attempts to lose weight

	Comparison					
	M vs F[a]		NM vs NF[b]		OM vs OF[c]	
Variable	X^2	p	X^2	p	X^2	p
Previous weight loss attempt	66.9	0.001	67.8	0.001	6.31	0.025
Number of times	36.6	0.001	29.8	0.001	12.0	0.025
Success	0.60	n.s.[d]	0.05	n.s.	2.45	n.s.
Methods used	10.6	n.s.	8.84	n.s.	7.36	n.s.

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

[d]Non-significant

Preference for Type of Weight Reduction Program

Most subjects (80%) reported a perference for a combination of fasting, exercise, and a general reduction of caloric intake should they want to lose weight. Normal weight women reported a significantly greater desire than did normal weight men to use methods other than the three above (26% of the women reported a preference for alternate methods while only 6% of the men did so). There was no difference between overweight men and overweight women in this regard with both groups reporting a preference for alternate programs (19% of the overweight men and 28% of the overweight women reported this preference).

There was a significant difference between normal weight men and normal weight women with regard to the amount of weight they felt they should lose per week (normal weight men reported an average weight loss of 3.7 pounds per week while normal weight women reported a desired weight loss of 3.0 pounds per week). In addition, normal weight men reported significantly more frequently that they preferred an individualized program of weight loss while normal weight women more often reported a desire to use a group situation in which to lose weight (82% of the normal weight men preferred to lose weight on an individual basis while only 55% of the normal weight women reported this preference). There were no differences between the overweight men and overweight women on either of these variables. Both overweight men and overweight women expressed somewhat of a desire to lose weight in a group setting (31% of the overweight men and 36% of the overweight women did so.

There were no differences as to the source of information that the subjects would consult regarding weight reduction techniques, with a wide variation within each group (see Appendix B, question 18).

Most of the subjects (64%) had no preference regarding the sex of the helping person, but those that did indicated that they preferred a same sexed helper. There was no difference as to the preferred age of the helper within any of the comparisons. All groups reported that they would want the helper to be of normal weight. The chi-square and significane level values for this section are presented in Table VI.

Outside Influences on Ideas About Desirable Weight

There was a significant difference between normal weight men and normal weight women as to the amount of influence that they felt the various items in question twenty (a partial list of possible influences on ideas about weight) had towards determining their desirable weight. In general, the normal weight women reported that they were influenced by the items to a greater degree than were the normal weight men (exact frequencies for each variable can be found in Appendix B, question 20). Overweight men, on the other hand, reported a greater level of influence than normal weight men and hence there were no differences between overweight men and overweight women on these variables. The chi-square and significance level values are presented in Table VII for this section.

Importance of Weight to Life Goals

There were no significant differences between men and women with regard to the importance of their weight in relation to the life goals

Table VI. Preference for type of weight reduction program

Variable	Comparison: M vs F[a] X^2	p	NM vs NF[b] X^2	p	OM vs OF[c] X^2	p
Method of weight control	39.7	0.001	35.2	0.001	5.60	n.s.[d]
Number of people involved	23.1	0.001	29.0	0.001	5.66	n.s.
Source of advice	11.6	n.s.	7.23	n.s.	8.30	n.s.
Sex of helper	55.6	0.001	42.4	0.001	13.5	0.005
Age of helper	5.29	n.s.	3.15	n.s.	7.03	n.s.
Weight of helper	0.81	n.s.	0.51	n.s.	0.51	n.s.
	t		t		t	
Amount of weight loss per week	6.56	0.001	3.64	0.001	1.56	n.s.

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

[d]Non-significant

Table VII. Outside influences on ideas about desirable weight

	Comparison					
	M vs F[a]		NM vs NF[b]		OM vs OF[c]	
Variable	X^2	p	X^2	p	X^2	p
Television documentaries	14.8	0.005	14.5	0.005	2.77	n.s.
Opinions of close friends	21.8	0.001	22.3	0.001	3.98	n.s.
Models, actors, athletes, etc.	12.8	0.005	15.2	0.005	0.61	n.s.
Society's views	25.7	0.001	23.7	0.001	6.41	n.s.
Opinions of family members	25.6	0.001	25.6	0.001	1.60	n.s.
Advertisements selling weight reduction aids	19.6	0.001	14.8	0.005	7.15	n.s.
Opinions of casual friends	4.41	n.s.	4.33	n.s.	1.90	n.s.
Characters in books, magazines, etc.	6.14	n.s.	6.46	n.s.	2.60	n.s.

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

presented except in the categories of physical attractiveness and ability to advance in a job field. On these two items normal weight women responded significantly more in the very important category than did the normal weight men. On the physical attractiveness item 85% of the normal weight women and 61% of the normal weight men chose the very important category. On the ability to advance in a job field item 17% of the normal weight women and 14% of the normal weight men selected the very important category. There were no such differences between overweight men and overweight women. All subjects responded that their weight was very important as it related to their health and their ability to participate in various recreational activities. The chi-square and significance level values for this section are presented in Table VIII.

Discussion

Results from the present study indicate that important differences do exist between college age men and women in relation to their ideas, beliefs, and general awareness level regarding their weight and various weight reduction programs. These differences should be kept in mind when one attempts to design treatment programs for obese individuals.

The data indicate that the prevalence of obesity within this college population is roughly the same for men and women, about 18%. Although little data exists as to the prevalence of obesity within a college population, this figure seems to be close to the few figures previously reported (Christakis, 1973).

Table VIII. Importance of weight to life goals

Variable	Comparison: M vs F[a] X^2	p	NM vs NF[b] X^2	p	OM vs OF[c] X^2	p
Ability to make close friends	2.25	n.s.[d]	1.57	n.s.	1.96	n.s.
Health	5.57	n.s.	4.71	n.s.	1.06	n.s.
Performance of a job	0.70	n.s.	0.15	n.s.	1.13	n.s.
Career choice	6.55	0.050	5.86	n.s.	2.80	n.s.
Attractiveness	29.2	0.001	27.4	0.001	2.45	n.s.
Family life	6.44	0.050	5.55	n.s.	1.02	n.s.
Ability to advance in a job	6.88	0.050	8.48	0.025	0.15	n.s.
Recreational activities	2.24	n.s.	2.12	n.s.	2.58	n.s.

[a]Male versus female

[b]Normal weight male versus normal weight female

[c]Overweight male versus overweight female

[d]Non-significant

Although the prevalence of obesity is comparable between men and women (19% and 17% respectively), the percentage of women who placed themselves in the overweight category is much higher than the percentage of men who did so (36% to 7%). Evidently men and women use different criteria to determine what is an acceptable weight for them, with women using a much more stringent cut-off point than men.

The women indicated that they were made aware of their weight by a wide range of cues, both social and physical. The men, on the other hand, indicated that only physical symptoms, such as shortness of breath, called their attention to their weight. This finding was the same regardless of the individual's actual weight, indicating that the women, on the whole, were more responsive to a wider range of cues regarding their weight than were the men. In general, women were more aware of their weight, a finding also reported by Ashwell and Etchell (1974) for a non-college adult population.

The results further indicate that women were much more likely than men to report at least one prior attempt to lose weight. In addition, of the individuals who did report at least one prior attempt at weight loss, women reported many more attempts than did men. Both of these findings seem to indicate that women place a greater restriction on what is a desirable weight for them. These findings, taken into account with the findings that women tend to view themselves as being somewhat overweight, indicate that this restriction of their weight may reach unrealistically low levels. Further, these findings support Goldblatt et al.'s (1965) idea that society places a greater importance

on the physical appearance of women and thus defines different levels of desirable weight for men and women.

Of the individuals who reported at least one attempt to lose weight, there were no sex related differences found as to the type of program that the individual used. Most of the subjects indicated that they had used a combination of an increase in exercise and a decrease in the amount of food eaten to produce the weight loss, rather than by using a specific diet or technique. Although men were less likely to try to lose weight and less likely to see themselves as being overweight, once they did decide to lose weight they used the same methods as did the women.

The sex related differences found in relation to the type of program that the subjects would prefer should they become overweight should be helpful in the design of future weight reduction programs. In general, the normal weight men indicated that they would utilize a program that was physically oriented should they become overweight. In addition, they indicated that they would want the program to be administered on an individual basis. The women, while indicating a perference for a physically oriented program, indicated that they would also utilize a group setting in which to lose weight.

The overweight men responded much like women in that they indicated that they too preferred a program which stressed exercise but were also willing to try a wide range of other programs as well. Again this may reflect the previous failures that his group has experienced with other methods of weight reduction.

Although both men and women indicated that they preferred to lose weight in an individually administered program, women were somewhat more willing to try and lose weight in a group situation. This was particularly evident within the overweight population where 20% (8 of 39) of the women indicated that they would try to lose weight in a group setting while only 3% (1 of 32) of the overweight men indicated that they would do so. The results seem to confirm the suggestion by Harns (1969) that commitment to a weight reduction group is somehow more difficult for men than for women. Part of the explanation may be that most groups so far have been made up almost exclusively by women and that men feel out of place in this type of group. Further, results discussed earlier suggest that men are generally less aware of their weight and less concerned about it and thus may be less willing to expose themselves to an intense group weight reduction program.

Further, differences were found between normal weight men and normal weight women in relation to the various situations that they felt influenced their weight. Women reported being influenced to a greater degree, in a greater number of situations than did the men. These results seem to further indicate that women are more aware of their weight and are more aware of what the socially desirable weight for them is (however stringent this may be). Normal weight men, on the other hand, indicated that they were influenced by few of the situations presented.

Overweight men indicated that they were aware of a wide range of influence as to what their weight should be. There was no sex related difference found between the overweight men and overweight women in this

respect. Again, it seems that once the overweight men have labeled themselves as overweight, a process that seems easier for women than for men, they respond to the various social cues regarding their weight much as women do. The main difference seems to be that men are less likely to label themselves as overweight and less likely to do anything about it when they do.

These results have important implications on at least two fronts: 1) education as to the health risks associated with various weight reduction methods as well as the risks associated with obesity, and 2) the design and implementation of new weight reduction programs which will better reach all of the obese individuals, both men and women.

With regard to education, the results indicate that women are very likely to label themselves as overweight even though their weight falls into acceptable categories in terms of associated mortality. This tends to lead women to try to lose weight through many different approaches, some of which may be harmful to their health. In addition, women may set unrealistically low levels of weight as goals and hence experience great difficulty in reaching and maintaining their desired weight. There is evidence to suggest that serum cholesterol levels are elevated in individuals who constantly gain and lose weight (U.S. Public Health Service, undated) so in fact these women may be increasing their chance of health difficulties rather than lowering them.

An appropriate goal then, is to educate women on what reasonable weights are for them as well as to stress the danger of various weight reduction programs if used in excess. Findings from the studies with

adolescents (Deisher and Mills, 1963; Dwyer, 1973; Huenemann et al., 1966) indicate that these educative efforts may be best applied with young adolescent girls who are starting to become aware of their figures and weight. These findings regarding desirable weight and dangers of weight reduction programs could be incorporated into the school curriculum, perhaps in the health classes.

Further, women who come to weight reduction programs should be carefully screened and should not be accepted for treatment is they fail to meet certain clinical criteria for being overweight.

The educative efforts with men should be directed towards alerting them to the health risks associated with obesity. This too would probably be most profitable if done before the individual becomes overweight and may be accomplished through the health classes currently being taught in junior and senior high schools. In addition, the men should be reminded of these dangers throughout their lives, perhaps through training sessions at their company or at least yearly by their physician.

The treatment implications of this study suggest programs be designed to treat specific sub-samples of the population rather than attempting to treat all individuals with the same program. For women, these programs should contain information to assist them in setting realistic desirable weight levels and discourage unrealistically low levels. These programs would probably reach the most women in need of such a program if they were run in conjunction with existing physically oriented programs such as physical education classes and at health spas.

Programs for men, would seem from the results, to do best when designed so as to allow them to be administered on an individual basis. The emphasis should be on increasing the amount of exercise that the individual engages in but at the same time also educate the participants as to proper eating habits and patterns in an attempt to modify the individual's eating behaviors. The greatest number of men would be served by incorporating this type of program into an existing physically oriented setting such as physical education classes, YMCAs, etc. If group administration of this type of program is to be effective, it should be done with all male groups and should be introduced as a body building or toning class rather than as a weight reduction group.

Overweight men seem to represent the fraction of men who have appropriately labeled themselves as overweight. Once this has happened, they seemed to be more finely attuned to the various social cues regarding their weight and what their weight should be. Some studies suggest that these men are more motivated to lose weight and report that they do better in weight reduction programs (Harns, 1969; Murray, 1975; Stunkard and McLaren-Hume, 1959). Evidently, although men are less aware of their weight in general, once they label themselves as overweight they react in many of the same ways as do women and may even lose more weight than the women involved in various treatment programs.

In conclusion, this study found that the incidence of obesity in a college population is roughly the same for men and women. Further, the results indicate important implications for the education of both normal weight and overweight individuals regarding desirable weight for

them as well as the various health risks associated with obesity. The results also indicate that the implementation of weight reduction programs would probably be most widely received by this group when they are run in conjunction with existing physically oriented programs.

APPENDIX A

HEALTH-WEIGHT QUESTIONNAIRE

1. Age _____

2. Sex Male _____ Female _____

3. Year in school _____

4. Major _____

5. How much school do you plan on finishing?

   less than that required for a bachelor's degree _____
   enough for a bachelor's degree _____
   enough for a master's degree _____
   enough for a doctorate degree _____

6. What is (or was) the usual occupation of your

   Father _____
   Mother _____

7. How much school did each complete?

	Mother	Father
Elementary school	_____	_____
Some high school	_____	_____
High school	_____	_____
Trade school or junior college	_____	_____
Some college or university work	_____	_____
Bachelor's degree	_____	_____
Master's degree	_____	_____
Doctorate degree	_____	_____
Other (specify)	_____	_____

8. In an average week would you rate your physical activity as:

   Light (e.g. mostly sitting and walking) _____
   Medium (e.g. jogging, regular bike riding, etc.) _____
   Heavy (e.g. daily sports or hard physical labor) _____

9. How much do you now weigh with your clothes on? _____

10. How much weight do you think that you could gain, from your present weight, before you would start to reduce? (e.g. 1 lb., 5 lbs., etc.)

_____

11. At the present time do you feel that you are:

Very much underweight _____
Slightly underweight _____
About the right weight _____
Slightly overweight _____
Very much overweight _____

12. At the present time do you feel that you are physically:

Very out of shape _____
Somewhat out of shape _____
In fairly good shape _____
In very good shape _____

13. Have you ever tried to lose weight?

Yes _____ No _____

If you have, how many times have you tried?

Once _____
2-3 _____
4-7 _____
8-10 _____
More than ten _____

Overall do you think that these attempts have been successful?

Yes _____ No _____

What approach(es) to weight reduction have you tried?

Exercise _____
Fasting _____
TOPS _____
Weight Watchers _____
Non-prescribed diet pills _____
Prescribed diet pills _____
Dr. Atkin's Diet _____
Stillman's Diet _____
Other (specify) _____

14. On the scale below, rate each of the following items in relation to how they may call your attention to your weight.

	Never calls attention	Sometimes calls attention	Always calls attention
What others say to me			
People's reactions to me in social situations			

14. (Continued)

	Never calls attention	Sometimes calls attention	Always calls attention
Its effect on my intimate relations			
Weighing myself			
Looking at myself in the mirror			
Physical symptoms (e.g. shortness of breath)			
The way my clothes fit			
General uncomfortable feeling			

Assume for the moment that you are overweight and want to lose weight.

15. Which of the methods below would you prefer to use to lose weight (Mark first, second, and third choices).

exercise programs _____
fasting _____
non-prescribed diet pills _____
prescribed diet pills _____
joining Weight Watchers or TOPS, etc. _____
Dr. Atkin's Diet _____
Stillman's Diet _____
Other specific diet (specify diet) _____

16. How much weight do you think that you should lose per week? (e.g. 1 lb., 2 lbs., 10 lbs., etc. per week) _____

17. Would you prefer to lose weight:

on your own (by yourself)? _____
with the help of (or in the company of) one other person? _____
with the help of (or in the company of) two or more people? _____

18. If you were to seek outside advice on how to lose weight, do you think that you would go to a:

friend _____
book or article with a specific program on how to lose weight _____

18. (Continued)

physically oriented program (e.g. P.E. class, YMCA, YWCA, etc.) _____
weight reduction "club" (e.g. Weight Watchers, TOPS, etc.) _____
family doctor _____
psychologist, psychiatrist, mental health worker, etc. _____
other (specify) _____

19. Would you prefer that the helper was:

A. Male _____ Female _____ No preference _____

B. Between
20-30 yrs. old _____ 50-60 yrs. old _____
30-40 yrs. old _____ over 60 yrs. old _____
40-50 yrs. old _____ No preference _____

C. Overweight _____
Normal weight _____
No preference _____

20. Their are various influences which contribute to how we see ourselves and consequently to the way we act. Some are subtle and some are not so subtle. On the scale below, rate each of the following items in relation to how you think that they may be influencing your ideas on what your weight should be.

	No influence	Not much influence	Some influence	Strong influence
Television documentaries and/or medical reports on weight problems				
Opinions of close friends				
Models, actors, actresses, athletes, etc. in general				
Society's views in general				
Opinions of family members				
Advertisements that are selling weight reduction aids (both the content of the ads and the appearance of the models)				
Opinions of the people at the groups or clubs to which you belong				

20. (Continued)

	No influence	Not much influence	Some influence	Strong influence
Characters in books, novels, magazine articles, short stories, etc.				

21. Rate how important you think your weight is (or will be) in relation to the items below.

	Not important	Somewhat important	Very important
Ability to make close friends			
Health			
Performance of a job			
Career choices			
Physical attractiveness			
Family life			
Ability to advance in a job field			
Recreational activities			

APPENDIX B

MEAN, RANGE, AND FREQUENCY DISTRIBUTION BY QUESTION

Key

NM= Normal weight males
NF= Normal weight females
OM= Overweight males
OF= Overweight females

Question

1. Age: mean age for each weight category

	Weight Category			
	NM	NF	OM	OF
$\bar{X}$	19.9	19.6	21.1	18.6
Range	18-57	16-44	18-43	17-26

2. Year in school: frequency within each weight category

	Weight Category			
Class Standing	NM	NF	OM	OF
Freshman	63	142	14	26
Sophomore	46	33	12	10
Junior	19	12	6	2
Senior	4	5	0	0
Graduate	2	0	0	1
Other	0	1	0	0

Question

5. Anticipated educational level: frequency within each weight category

	Weight Category			
Degree	NM	NF	OM	OF
Less than a B.A.	2	0	2	3
Bachelor's	63	124	12	19
Master's	42	55	14	14
Doctorate	27	12	4	3

6,7. Social class standing: frequency within each weight category

	Weight Category			
Social Class Standing	NM	NF	OM	OF
Low	32	40	6	8
Medium	41	50	13	14
High	61	103	13	17

8. Physical activity: frequency within each weight category

	Weight Category			
Activity Level	NM	NF	OM	OF
Light	26	50	10	10
Medium	80	131	9	25
Heavy	28	12	13	4

Question

9. Weight estimation: mean pounds over (+) or under (-) actual weight

	Weight Category			
	NM	NF	OM	OF
$\bar{X}$	+1.87	+0.18	+2.78	-1.10
Range	-9 to +20	-16 to +9	-8 to +15	-13 to +11

10. Allowable weight gain: mean pounds for each weight category

	Weight Category			
	NM	NF	OM	OF
$\bar{X}$	11.62	2.44	3.44	1.62
Range	0 to 50	0 to 25	0 to 15	0 to 10

11. Self described weight category: frequency within each weight category

	Weight Category			
Description	NM	NF	OM	OF
Very under-weight	6	0	0	0
Somewhat underweight	36	15	0	0
About the right weight	60	57	4	0
Somewhat overweight	32	111	23	23
Very over-weight	0	10	5	16

Question

12. Estimate of physical shape: frequency within each weight category

Description	Weight Category NM	NF	OM	OF
Very out of shape	2	13	4	4
Somewhat out of shape	38	78	8	19
In fairly good shape	70	97	17	15
In very good shape	24	5	3	1

13. Previous attempts to lose weight: frequency within each weight category

	Weight Category NM	NF	OM	OF
Yes	51	159	27	39
No	83	34	5	0

Of the yes responses-

Number of attempts

	Weight Category NM	NF	OM	OF
Once	21	21	5	1
2-3	25	67	17	16
4-7	4	28	2	9

Question

13. Previous attempt to lose weight (continued)

Number of attempts

	Weight Category			
	NM	NF	OM	OF
8-10	1	15	2	5
More than 10	0	28	1	8

Ratings of success

	Weight Category			
	NM	NF	OM	OF
Yes	39	119	20	21
No	12	40	7	17

Methods used (some individuals chose more than one method)

	Weight Category			
Method	NM	NF	OM	OF
Exercise	38	142	24	35
Fasting	23	87	13	21
TOPS	0	2	0	0
Weight Watchers	0	12	5	10
Non-prescribed diet pills	3	17	1	6
Prescribed diet pills	0	10	0	4
Dr. Atkin's diet	2	22	2	6
Stillman's diet	4	20	1	7
Other	19	73	8	22

Question
14. Cues for weight: frequency within each weight category

	Weight Category			
Variable	NM	NF	OM	OF
Other's remarks				
Never	34	23	10	4
Sometimes	68	107	17	20
Always	32	63	5	15
Other's reactions				
Never	59	56	15	8
Sometimes	63	111	14	20
Always	32	26	2	11
Effect on relationships				
Never	58	52	17	6
Sometimes	62	87	11	20
Always	14	54	4	12
Weighing self				
Never	14	11	1	1
Sometimes	61	43	11	5
Always	59	139	20	31
Looking in mirror				
Never	20	3	1	0
Sometimes	74	73	18	15
Always	40	117	13	23
Physical symptoms				
Never	74	100	16	18
Sometimes	40	64	14	16
Always	20	29	2	5

Question
14. Cues for weight (continued)

	Weight Category			
Variable	NM	NF	OM	OF
Fit of clothes				
Never	37	10	4	2
Sometimes	72	72	21	16
Always	25	77	7	21
General uncomfortable feeling				
Never	65	34	10	5
Sometimes	53	77	13	21
Always	16	82	9	13

15. Preferred methods of weight loss: frequency within each weight category

	Weight Category			
Method	NM	NF	OM	OF
Exercise program	109	104	21	16
Fasting	13	19	2	1
Non-prescribed diet pills	0	0	0	0
Prescribed diet pills	0	4	0	1
Weight "club"	1	25	2	6
Dr. Atkin's diet	4	11	4	3
Stillman's diet	3	8	0	1
Other	4	21	3	5

Question

16. Projected weight loss per week: mean pounds per week for each weight category

	Weight Category			
	NM	NF	OM	OF
$\bar{X}$	3.7	3.0	3.5	3.0
Range	0-15	0.5-10	1-8	2-5

17. Number of people involved in weight loss attempt: frequency within each weight category

	Weight Category			
Number of People	NM	NF	OM	OF
None (Alone)	110	107	22	25
One	13	67	9	6
More than one	10	18	1	8

18. Source of information: frequency within each weight category

	Weight Category			
Information Source	NM	NF	OM	OF
Friend	15	26	3	6
Book or article with specific program	33	43	6	10
Physically oriented program	38	57	17	13
Weight "club"	9	28	2	8

Question
18. Source of information (continued)

Information Source	Weight Category NM	NF	OM	OF
Family doctor	50	81	9	15
Psychologist, etc.	4	2	1	0
Other	5	4	1	0

19. Characteristics of helper: frequency within each weight category

Variable	Weight Category NM	NF	OM	OF
Sex				
Male	26	4	7	0
Female	17	69	4	16
No pref.	91	119	21	23
Age				
20-30	70	83	17	17
30-40	9	12	3	0
40-50	1	2	0	2
50-60	0	1	1	0
over 60	0	0	0	0
No pref.	54	94	11	18
Weight				
Overweight	4	7	2	4
Normal	95	129	21	23
No pref.	35	56	9	12

Question

20. Influences on ideas about desirable weight: frequency within each weight category

	Weight Category			
Variable	NM	NF	OM	OF
Television documentaries				
No	37	24	6	3
Not much	35	60	10	11
Some	55	86	12	21
Strong	7	23	4	4
Opinions of close friends				
No	6	1	1	1
Not much	20	26	6	2
Some	72	69	13	15
Strong	36	97	12	21
Models, actors, athletes, etc.				
No	27	33	7	7
Not much	55	56	8	8
Some	45	67	12	18
Strong	7	37	5	6
Society's views				
No	21	19	5	1
Not much	56	46	12	10
Some	49	88	9	19
Strong	8	40	6	9
Opinions of family members				
No	14	3	1	0
Not much	27	20	4	5
Some	58	81	17	17
Strong	35	89	10	15

Question

20. Influences on ideas about desirable weight: frequency within each weight category (continued)

Variable	Weight Category NM	NF	OM	OF
Advertisements selling weight reduction items				
No	96	101	22	16
Not much	30	67	8	13
Some	4	20	2	8
Strong	4	5	0	2
Opinions of casual friends				
No	22	24	8	5
Not much	51	61	7	10
Some	55	92	13	19
Strong	6	16	4	4
Characters in books, magazines, etc.				
No	92	113	19	24
Not much	33	51	11	11
Some	9	27	1	4
Strong	0	2	1	0

Question

21. Importance of weight in relation to life goals: frequency within each weight category

	Weight Category			
Variable	NM	NF	OM	OF
Ability to make close friends				
Not	74	111	21	22
Somewhat	51	75	10	17
Very	9	7	1	0
Health				
Not	6	3	0	0
Somewhat	20	19	6	4
Very	108	171	26	35
Performance of a job				
Not	17	22	6	4
Somewhat	72	107	20	28
Very	45	64	6	7
Career choice				
Not	41	40	11	8
Somewhat	69	101	15	26
Very	24	52	6	5
Attractiveness				
Not	6	0	1	0
Somewhat	43	27	13	11
Very	82	166	18	28
Family life				
Not	45	52	12	15
Somewhat	74	101	18	19
Very	15	40	2	5
Ability to advance in a job				
Not	42	34	8	10
Somewhat	72	127	18	23

Question
21. Importance of weight in relation to life goals (continued)

Variable	Weight Category NM	NF	OM	OF
Ability to advance in a job (cont.)				
Very	20	32	6	6
Recreational activities				
Not	6	4	1	0
Somewhat	34	43	9	17
Very	94	146	22	22

REFERENCES

Abramson, E. E. A review of behavioral approaches to weight control. Behavior Research and Therapy, 1973, 11, 547-556.

Albright, D. G. Comaprison of different amounts of therapist contact in the treatment of obesity. Doctoral dissertation in progress, University of Arizona.

Ashwell, M. and Etchell, L. Attitude of the individual to his own body weight. British Journal of Preventative and Social Medicine, 1974 28, 127-132.

Balch, P. and Balch, K. Establishing a campus-wide behavioral weight reduction program through a university student health service: The use and training of health service personnel as behavioral weight therapists. Journal of the American College Health Association, 1976, 25, 148-152.

Bellack, A. S. Behavioral treatment of obesity: Appraisal and recommendations. In M. Hersen, R. Eisler, and P. Miller (Eds.) Progress in behavior modification (Vol. 4). New York: Academic Press, 1977.

Bray, G. A. (Ed.) Obesity in perspective (Vol. 2, part 1). Washington, D. C.: U. S. Goverment Printing Office, 1973.

Christakis, G. The prevalence of adult obesity. In G. A. Bray (Ed.) Obesity in perspective (Vol. 2, part 2). Washington, D. C.: U. S. Goverment Printing Office, 1973.

Deisher, R. W. and Mills, C. A. The adolescent looks at his health and medical care. American Journal of Public Health, 1963, 53, 1928-1936.

Dwyer, J. T. Psychosexual aspects of weight control and dieting behavior in adolescents. Medical Aspects of Human Sexuality, 1973, 7, 82-108.

Dwyer, J. T., Feldman, J. J., and Mayer, J. The social psychology of dieting. In N. Kiell (Ed.) The psychology of obesity: Dynamics and treatment. Springfield, Ill.: Charles C. Thomas, 1973.

Dwyer, J. T. and Mayer, J. Attitudes toward body weight and dieting behavior. Potential dieters: Who are they? Journal of the American Dietetic Association, 1970, 56, 510-514.

Goldblatt, P. B., Moore, M. B., and Stunkard, A. J. Social factors in obesity. Journal of the American Medical Assoiciation, 1965, 192, 1039-1044.

Gormanous, G. K. and Lowe, W. C. Locus of control and obesity. Psychological Reports, 1975, 37, 10.

Hall, S. M. and Hall, R. G. Outcome and methodological considerations in behavioral treatment of obesity. Behavior Therapy, 1974, 5, 352-364.

Harns, M. B. Self directed program for weight control: A pilot study. Journal of Abnormal Psychology, 1969, 74, 263-270.

Hollingshead, A. B. Two-factor index of social position. Unpublished manuscript, 1957. (Available from Yale University, Department of Psychology).

Huenemann, R., Hampton, M., Shapiro, L., and Behnke, A. Adolescent food practices associated with obesity. Federation Proceedings, 1966, 25, 4-10.

Karpowitz, D. H. and Zeis, F. R. Personality and behavior differences of obese and non-obese adolescents. Journal of Consulting and Clinical Psychology, 1975, 43, 886-891.

Kreze, A., Zelina, M., Juhas, J., and Garbara, M. Relationship between intelligence and relative prevalence of obesity. Human Biology, 1974, 46, 109-113.

Leon, G. R. Current directions in the treatment of obesity. Psychological Bulletin, 1976, 83, 557-578.

Lindstrom, L. L., Balch, P., and Reese, S. In person versus telephone treatments of obesity. Journal of Behavior Therapy and Experimental Psychiatry, 1976, 7, 367-369.

Moore, M. E., Stunkard, A. J., and Srole, L. Obesity, social class, and mental illness. Journal of the American Medical Association, 1962, 182, 962-971.

Murray, D. C. Treatment of overweight: I. Relationship between initial weight and weight change during behavior therapy of overweight individuals: Analysis of data from previous studies. Psychological Reports, 1975, 37, 243-248.

Murray, D. C., Davidoff, L., and Harrington, L. G. II. In vivo self-control training. Psychological Reports, 1975, 37, 249-258.

Nathan, S. Body image in chronically obese children as reflected in figure drawings. Journal of Personality Assessment, 1973, 37, 455-463.

Oscancova, K. and Hejda, S. Nutrition and attitude to obesity: Epidemiological survey in a population with a high incidence of obesity. Review of Czechoslovakian Medicine, 1970, 16, 131-139.

Silverstone, J. T. Psychosocial aspects of obesity. Proceedings of the Royal Society of Medicine, 1968, 61, 371-375.

Silverstone, J. T. Obesity and social class. Psychotherapy and Psychosomatics, 1970, 18, 226-230.

Silverstone, J. T., Gordon, R. P., and Stunkard, A. J. Social factors in obesity in London. Practioner, 1969, 202, 682-688.

Stuart, R. B. and Davis, B. Slim chance in a fat world: Behavioral control of obesity. Champaign, Ill.: Research Press, 1972.

Stunkard, A. J. and McLaren-Hume, M. The results of treatment for obesity: A review of the literature and a report of a series. Archieves of Internal Medicine, 1959, 103, 79-85.

Stunkard, A. J. and Mendelson, M. Disturbances in body image of some obese persons. Journal of the American Dietetic Association, 1961, 38, 328-331.

U. S. Public Health Service. Weight, height, and selected body dimensions of adults: United States, 1960-1962. Washington, D. C.: U. S. Goverment Printing Office, 1965.

U. S. Public Health Service. Weight by height and age of adults: United States, 1960-1962. Washington, D. C.: U. S. Goverment Printing Office, 1966.

U. S. Public Health Service. Obesity and health. Washington, D. C.: U. S. Goverment Printing Office, undated.

Wunderlich, R. A. Personality characteristics of super-obese persons as measured by the California Personality Inventory. Psychological Reports, 1974, 35, 1029-1030.

Wunderlich, R. A., Johnson, W. G., and Ball, M. F. Some personality correlates of obese persons. Psychological Reports, 1973, 32, 1267-1277.