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FACTORS AFFECTING COMPLIANCE IN A BEHAVIOR MODIFICATION
WEIGHT REDUCTION PROGRAM: A STUDY OF THE LOCUS OF CONTROL
THEORY

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FACTORS AFFECTING COMPLIANCE IN A BEHAVIOR MODIFICATION
WEIGHT REDUCTION PROGRAM: A STUDY OF
THE LOCUS OF CONTROL THEORY

by

Susanne Crowley

A Thesis Submitted to the Faculty of the
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For the Degree of
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WITH A MAJOR IN DIETETICS
In the Graduate College
THE UNIVERSITY OF ARIZONA

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STATEMENT BY AUTHOR

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SIGNED: Susanne Crowley

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Ed T. Sheehan
E. T. SHEEHAN
Associate Professor of Nutrition
and Food Science

8/5/86
Date

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vi
ABSTRACT.....	ix
INTRODUCTION.....	1
Problem Statement.....	4
Statement of Hypothesis and Related Questions..	5
Definitions.....	6
REVIEW OF LITERATURE.....	8
Locus of Control in Nutrition.....	10
Locus of Control in Obesity Therapy.....	12
Other Predictor Variables.....	15
Demographics.....	15
Personal Weight History.....	16
METHODOLOGY.....	18
Study Design.....	18
Sample Population.....	18
Measurement Instruments.....	19
Diet and Weight History Questionnaire.....	19
Multidimensional Health Locus of Control (MHLC) Scale.....	20
Weight Locus of Control (WLOC) Scale.....	20
Data Collection.....	21
Analysis of Data.....	22
RESULTS AND DISCUSSION.....	23
The Sample Population.....	23
Amount of Weight Loss and Meetings Missed.....	23
Personal Weight History.....	29
Reasons for Wanting to Lose Weight.....	29
Previous Weight Loss Methods.....	35
Locus of Control.....	38
Multidimensional Health Locus of Control Scales (MHLC).....	38

TABLE OF CONTENTS--Continued

	Page
Correlational Data.....	43
MHLC Intercorrelations.....	43
WLOC Correlations with the MHLC Scales.....	45
Correlation Between MHLC Scales and Amount of Weight Loss.....	47
Correlation Between WLOC Scale and Amount of Weight Loss.....	49
Correlation Between MHLC Scales and Number of Meetings Missed.....	50
Correlation Between WLOC Scale and Number of Meetings Missed.....	50
Distribution of Number of Meetings Missed in Relation to WLOC Internal or External Orientation.....	52
Limitations.....	54
Further Use of Locus of Control in Weight Loss Studies.....	54
Conclusions.....	56
Descriptive Conclusions.....	56
Factors Associated with Weight Loss.....	56
Factors Not Associated with Weight Loss or Compliance.....	57
Locus of Control Scales.....	57
Recommendations.....	58
APPENDIX A: STUDY QUESTIONNAIRE.....	60
REFERENCES.....	67

LIST OF TABLES

Table	Page
1. Distribution of University of Arizona Student Health Center's weight reduction program participants for two demographic variables.....	24
2. Distribution of amount of weight loss achieved by the participants in the University of Arizona Student Health Center's weight reduction program.....	25
3. Distribution of number of meetings missed by participants in the University of Arizona Student Health Center's weight reduction program.....	27
4. Amount of weight lost in relation to meetings missed by the participants in the University of Arizona Student Health Center's weight reduction program.....	28
5. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight.....	30
6. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight compared to the amount of weight loss achieved by the participants by the end of the ten-week program.....	32
7. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight compared to the number of pounds above ideal body weight of the participants at the beginning of the program.....	34

LIST OF TABLES--Continued

Table	Page
8. Previous weight loss methods reported by participants in the University of Arizona Student Health Center's weight reduction program.....	36
9. Comparison of previous use or nonuse of calorie counting in an attempt to lose weight to amount of weight loss achieved by the participants in the University of Arizona Student Health Center's weight reduction program.....	37
10. Multidimensional Health Locus of Control (MHLC) scales: means, standard deviations and range of scores obtained from the participants in the University of Arizona Student Health Center's weight reduction program.....	39
11. Distribution of Multidimensional Health Locus of Control (MHLC) scores for the participants in the University of Arizona Student Health Center's weight reduction program.....	40
12. Weight Locus of Control (WLOC) scale: mean, standard deviation and range of scores obtained from the participants in the University of Arizona Student Health Center's weight reduction program.....	41
13. Classification of participants in the University of Arizona Student Health Center's weight reduction program as either internal or external by use of the mean of scores for the Weight Locus of Control (WLOC) scale.....	42
14. Intercorrelations of the Multidimensional Health Locus of Control scales: results of the current study compared to results of Wallston et al. (1978).....	44

LIST OF TABLES--Continued

Table		Page
15.	Correlation between the Weight Locus of Control (WLOC) scale and the Multidimensional Health Locus of Control (MHLC) scales; results of the current study compared to results of Saltzer (1982).....	46
16.	Correlation between scores on the locus of control scales of the participants in the University of Arizona Student Health Center's weight reduction program and amount of weight loss achieved by the participants....	48
17.	Correlation between scores on the locus of control scales of the participants in the University of Arizona Student Health Center's weight reduction program and number of meetings missed by the participants.....	51
18.	Distribution of number of meetings missed by the participants in the University of Arizona Student Health Center's weight reduction program in relation to each participant's internal or external orientation as derived from the Weight Locus of Control (WLOC) scale.....	53

ABSTRACT

Poor attendance and high attrition rates have persisted as long-standing problems in all types of weight reduction programs and obesity research. This fact is demonstrated by estimates of noncompliance in weight control ranging from 20% to 80%.

This study was designed to determine if locus of control is useful in predicting compliance to a behavior modification weight loss program. The Multidimensional Health Locus of Control (MHLC) scales and Weight Locus of Control (WLOC) scale were used to examine the associations between an individual's locus of control orientation and his compliant appointment-keeping behavior.

Results of the study revealed no significant correlations between the subjects' locus of control scores and compliance rate. This finding supports the suggestion that more specific instruments relevant to specific conditions need to be developed in order to predict particular behaviors in that condition.

INTRODUCTION

During the past 100 years, obesity has become one of the most common metabolic disorders in all affluent societies. In defining obesity as 20% above desirable body weight, recent prevalence data for this country indicate that 10% of preschool children, 10% of school age children, 15% of adolescents, and 30% of adults are obese (O'Connell et al., 1985; Zakus, 1982; Maloney and Klykylo, 1983). These staggering estimates illustrate that obesity is a major public health problem of epidemic proportions.

Despite the increase in public awareness of the adverse consequences of obesity, obese individuals cite cosmetic and psychological stress far more frequently than health for desiring weight loss (Greenwood, 1983). Consequently, in a society where the majority of the public believes that "thin is in," weight control has become a fixation for millions of individuals who do not fall under the category of being obese. This obsession with weight loss has led to the development of thousands of new and improved diets, weight control centers, obesity camps and books promising quick and effortless methods of weight loss. In turn, this never ending attempt to combat the "battle of the bulge" has led to a multi-billion dollar diet industry.

There is little question that the majority of the methods promising miraculous and easy weight loss may be successful for short term weight loss, but overall fail in the long run to maintain the loss and fail to promote significant losses of body weight (Atkinson et al., 1984). Because efforts to establish reliable and effective methods for weight control have been largely unsuccessful, Stunkard (1958) concluded that most obese persons will not stay in treatment for obesity, and of those who stay in treatment, most will not lose weight and of those who do lose weight, most will regain it. This is supported by hundreds of investigations which demonstrate that virtually all forms of the treatment of obesity have one thing in common: failure (Atkinson et al., 1984).

Poor attendance and high attrition rates have persisted as long-standing problems in all types of weight reduction programs and obesity research. Drop-outs and sporadic attendance can reduce group morale, contribute to feelings of guilt and failure that overweight persons frequently experience, seriously affect the significance and generalizability of any evaluation results, increase administrative costs and may be related to less success in weight loss (Mullen and Culjat, 1980). Therefore, improving attendance and decreasing drop-outs in weight reduction programs is of considerable interest to health professionals.

In order to effectively combat this high failure or drop-out rate, health behavior researchers have focused their attention on discovering what variables might predict adherence or success in a variety of weight control programs. As suggested by Chavez and Michaels (1980), predictive variables should predict what the subject will do within a weight control program rather than simply describe the subject. The variables which have been looked at the most include demographic features, personal weight history and personality measures. However, locus of control has received increasing attention as being a useful predictor variable of success or completion in weight loss programs.

The general concept of locus of control, rooted in the social learning theory (Rotter, 1954), has been expanded by several researchers to include a Health Locus of Control (HLC) scale (Wallston et al., 1976), a Multidimensional Health Locus of Control (MHLC) scale (Wallston, Wallston and DeVellis, 1978), and a Weight Locus of Control (WLOC) scale (Saltzer, 1982).

Overall, each scale functions to measure a person's internal or external orientation, depending upon his score on that particular scale. Individuals scoring in the internal direction believe that the attainment of a certain reward, goal or behavior outcome situation is dependent upon their own action or behavior, while externally oriented

persons believe that attainment of a reward, goal or outcome is in the control of other persons, or is the result of chance, luck or fate (Eden et al., 1984).

Problem Statement

Attrition is a critical problem in obesity research. This is illustrated by estimates that anywhere from 20% to 80% of patients or individuals fail to complete treatment programs (Volkmar et al., 1982; Follick et al., 1984). Currently, the use of locus of control has shown that weight control treatments may be differentially effective for internally and externally oriented subjects.

The rationale behind the use of locus of control in the area of obesity and weight reduction has been that an internally oriented person will stay in a program longer and will be more successful at losing weight than an externally oriented individual (Weiss, 1977). However, even though locus of control has been called a useful predictor variable for success or completion in obesity therapy, the need for further investigations utilizing locus of control still exists due to the failure of several researchers to find significant relationships between locus of control and success or completion in weight control therapy.

Statement of Hypothesis and
Related Questions

- H₁: An individual's position on the Multidimensional Health Locus of Control (MHLC) scale and the Weight Locus of Control (WLOC) scale will predict his degree of compliance to the weight loss program.
- Q₁: Is there a relationship between amount of weight loss and number of meetings missed by the subjects?
- Q₂: What reasons are reported for why participants wanted to lose weight and how often are they reported?
- Q₃: Is there a relationship between reasons why participants wanted to lose weight and amount of weight loss; number of meetings missed; pounds above ideal body weight?
- Q₄: What reported methods of previous weight loss attempts have been indicated and how often are they reported?
- Q₅: Is there a relationship between individuals who have or have not used calorie counting as a previous method in the attempt to lose weight and amount of weight loss; number of meetings missed?
- Q₆: Are there significant correlations between the scores on the MHLC scales and amount of weight loss; the scores on the WLOC scale and amount of weight loss?
- Q₇: Are there significant correlations between the scores on the MHLC scales and number of meetings missed; the scores on the WLOC scale and number of meetings missed?

Definitions

Compliance: The extent to which an individual's behavior coincides with the prescribed program regimen, mainly keeping appointments.

Locus of Control: A unidimensional measure of people's beliefs that their health is or is not determined by their behavior (Wallston, Wallston and DeVellis, 1978).

Internal Health Locus of Control (IHLC): A scale used to measure the degree to which an individual believes that his state of health or well being is the result of one's own actions and behaviors (Wallston et al., 1978).

Powerful Others Health Locus of Control (PHLC): A scale used to measure the degree to which an individual believes that his health is under the control of other persons or things more powerful than himself (e.g., doctors, nurses, social pressures, etc.) (Wallston et al., 1978).

Chance Health Locus of Control (CHLC): A scale used to measure the degree to which an individual believes that his health is a result of chance, fate or luck (Wallston et al., 1978).

Multidimensional Health Locus of Control (MHLC) Scales: A collective term used to describe the IHLC, PHLC and CHLC, developed by Wallston et al. (1978).

Weight Locus of Control (WLOC): A scale which specifically measures locus of control (internal or external orientation) with respect to weight (Saltzer, 1982).

REVIEW OF LITERATURE

Health concerns and health costs constitute a social problem of enormous magnitude in this country (Strickland, 1978). This increased concern with health has allowed individuals the ability to make responsible quality lifestyle changes involving preventive measures, including eating well balanced meals, exercising, refraining from smoking and taking prescribed medications. However, individuals frequently do not make such changes for the better, and public noncompliance with health recommendations has become a serious problem in all areas of medical practice today (Becker et al., 1980).

Within the past decade, a number of studies have consistently shown that an individual's beliefs about his health, and about his particular illness and its treatment, have a strong influence on the likelihood of compliance (Becker et al., 1980). Numerous psychosocial models have been constructed during the past 20 years in an attempt to explain voluntary health-related behaviors and to discover the psychological and social factors that influence whether or not a person will adhere or comply to a prescribed treatment. Among these models, the framework which has received the most direct attention and study and which has

influenced much additional research is the Health Belief Model (HBM) (Becker et al., 1977). Originally, the HBM hypothesized that individuals seek preventive health care based on their perception of susceptibility to an illness, severity of an illness, efficacy of treatment and difficulties involved in the treatment (DiMateo et al., 1982). Also, a "cue to action," due to an internal or external stimulus, must occur to initiate the desired behavior. The majority of studies using the HBM have tended to support these latter concepts, but it should be pointed out that other forces besides an individual's beliefs and attitudes influence health actions.

In addition to the HBM, a psychological construct called locus of control has contributed a great deal to health behavior research. The concept of locus of control was developed out of Rotter's (1954) Social Learning Theory. According to the theory, an internally oriented person believes that an event is contingent upon his own actions, while an externally motivated person believes that an event that occurs is the result of chance, luck or fate (Rotter, 1966). However, this internal-external scale is very broad and generalized, and Rotter (1975) recommended that more specific instruments measuring specific expectancies for personal control relevant to the situation would be more appropriate and useful. In simpler terms, the development

of specific scales for particular situations would allow for more accurate predictions of an individual's behavior in that situation.

One such instrument, the Health Locus of Control (HLC) scale (Wallston et al., 1976) was designed as a unidimensional measure of an individual's belief that health is or is not determined by one's behavior. The original scale consisted of eleven health-related statements, and persons were classified as either internal or external, depending upon their scores. However, Wallston, Wallston and DeVellis (1978) later expanded upon the unidimensional HLC scale by identifying three separate locus of control scales: (1) Internal Health Locus of Control (IHLC) scale, (2) Powerful Others Health Locus of Control (PHLC) scale, and (3) Chance Health Locus of Control (CHLC) scale. The collective term for the three scales is the Multidimensional Health Locus of Control (MHLC) scales, and overall they were expanded to provide details concerning internal orientations (IHLC) and two separate types of external orientations (PHLC and CHLC). Further details regarding the MHLC scales will be outlined later in this report.

Locus of Control in Nutrition

Research utilizing the concept of locus of control in a variety of nutrition-related areas has shown to be contradictory but useful to a certain extent. A study

completed by Blackburn (1977) investigated dietary compliance of chronic hemodialysis patients. Using Rotter's (1966) internal-external scale, the author hypothesized that patients who were internally motivated according to the scale would be more compliant to the prescribed diet. However, in comparing internal-external scores with compliance variables (K^+ , phosphorus, and weight gain), no significant correlations were found.

Alogna (1980), using Wallston's et al. (1976) HLC scale, reported no significant differences between diabetic compliers and non-compliers in relation to internal or external orientation. However, it was revealed that compliant subjects scored slightly higher in the internal direction of the scale. The HLC scale may have been too generalized and broad, illustrating the need for more specific scales relevant to the specific condition which would be better predictors of compliant behavior.

In a more recent study, Eden et al. (1984) applied the locus of control theory to the understanding of nutrition behavior, using the MHLC scales as the major basis for the questionnaire used. The results obtained demonstrated that the MHLC scales were useful but too narrow a construct for the study. Overall, the results indicated the need to expand the three dimensions of the MHLC scales to explain the discrepancies between a person's beliefs in the factors

that control the outcome of good nutrition habits and the factors that determine the person's actual behavior (Eden et al., 1984). Here again, this study supports the recommendation for more specific instruments to be designed in order to predict particular behaviors in particular circumstances.

Apparent from these latter studies and several others, the locus of control theory has proven to a certain extent to be a useful tool in predicting and understanding health and nutrition behaviors. However, there are many avenues of investigation in the further development of the locus of control concept that should be pursued in order to extend the effectiveness of the construct.

Locus of Control in Obesity Therapy

The majority of research using the locus of control in nutrition studies has been in the areas of obesity and weight reduction. Investigations in these areas have focused mainly on what variables are predictive of success or completion in the treatment of obesity. However, as in the case with previous studies presented, varying and contradictory results have been demonstrated.

Using Rotter's (1966) internal-external scale, Balch and Ross (1975) examined the relationship between locus of control and completion and success in a self-control weight reduction program. Results indicated significant correlations between internality and completion and success in the

program. The researchers suggested that internally oriented individuals may be more successful in a self-control type of weight reduction program, while externally oriented persons may prefer and have greater success in programs using social support or external pressure. Also, Balch and Ross (1975) pointed out that using locus of control measures to identify individuals likely to benefit from specific types of treatments appears to be a promising approach for weight reduction programs.

This latter concept was supported by results from a study completed by Wallston et al. (1976). Using their own HLC scale, the researchers found that HLC internals lost more weight in a self-directed program (internally oriented), while HLC externals lost more weight in an externally oriented group program.

On the other hand, Tobias and MacDonald (1977) failed to find significant correlations between locus of control and weight loss. It should be noted, however, that they did find that subjects in the self-directed program became more internally oriented (scored higher on scales) as the program progressed. Along the same lines, Monahan (1972), Vincent et al. (1976) and Jeffrey and Christensen (1975) found no significant relationships between locus of control orientation and success in weight control therapy.

Apparent from the equivocal findings from these studies, was the need for specific measures of expectancy for locus of control in the area of weight reduction treatments. Acting on this need for more specific scales, Saltzer (1982) developed a Weight Locus of Control (WLOC) scale designed to predict behaviors in weight reduction. Results of two validation studies outlined preliminary evidence that the WLOC scale specifically distinguishes predicted weight loss behavior in relation to a weight specific locus of control. Using the WLOC scale, a significant association was shown between internal orientation and program completion. Also, program completers who scored internally were more successful at weight loss than those program completers who had scored in the external direction. On the other hand, the authors found that Rotter's (1966) internal-external scale, Wallston's et al. (1976) HLC scale and Wallston's et al. (1978) MHLC scales were not successful in predicting behavior associated with weight loss in the study. Although further studies are needed to test the WLOC scale, findings from the validation studies support the suggestion that the more specific the scale, the better the predictability of certain behaviors in particular situations.

Overall, use of a number of locus of control scales have demonstrated the functional utility of these constructs

in successfully predicting behaviors in a variety of areas. To date, a great deal of research in the area of weight loss and obesity has shown significant relationships between an individual's score on locus of control scales and completion and/or success in a weight reduction program. Currently, the WLOC (Saltzer, 1982) scale appears to be the most specific and useful scale available in predicting success or completion in a weight loss program. However, further testing of the WLOC scale is needed in studies involving larger populations, different types of weight control programs and variations of the population to determine the value of the scale and to aid in the future design of new scales that are more specific in measuring an individual's locus of control with respect to weight and weight loss behavior. Should this research prove positive results, two possible strategies might be employed: (1) subjects could be channeled into appropriate treatment programs based upon their locus of control, or (2) remedial treatment could be offered prior to a weight reduction program to alter the subject's locus of control (Weiss, 1977). As of yet, neither is feasible or practical.

Other Predictor Variables

Demographics

The majority of research completed on investigating the demographic variables of age and sex as possible

predictor variables of success in weight control has produced equivocal results.

Studies by Harris (1969), Cormier (1972) and Musante and Perelman (1974) reported greater weight loss for males than females, while Elliot and Denney (1975) and Silverstone and Cooper (1972) both reported no significant differences between males and females in weight loss. Overall, evidence is unconvincing because of confounding variables and the lack of uniform and appropriate criteria for success in weight loss (Weiss, 1977). Also, no significant and consistent relationships have been demonstrated between a subject's age, weight, percent overweight and attrition (Foreyt and Hagen, 1973).

Personal Weight History

Personal weight history variables, including previous dieting methods, activity levels, eating habits, pounds above ideal body weight and several other measures have been investigated as possible predictor variables in weight loss studies.

A study completed by Borden (1974) reported that previous diet attempts were negatively related to weight loss. However, the majority of researchers has failed to find a relationship between success in weight loss programs and prior dieting (Bellack et al., 1974; Stunkard and McLaren-Hume, 1959; Wing and Jeffrey, 1976). Also, Mahoney

(1974) and Wollersheim (1974) found no relationship between weight loss success and pretreatment eating patterns and activity level, respectively.

Overall, the majority of research investigating personal weight history variables for their predictive value in weight loss studies has generally reported no significant correlations. Therefore, as stated by Weiss (1977), this line of research would best be abandoned for more promising avenues of investigation.

METHODOLOGY

Study Design

This study was designed to investigate possible predictor variables of compliance to a behavior modification weight reduction program. The relationship between locus of control of the participants and their compliant appointment keeping behavior was of major interest. Data were collected from the subjects by implementing a diet and weight history questionnaire and two separate locus of control scales: (1) Multidimensional Health Locus of Control scales, and (2) Weight Locus of Control scale.

Sample Population

The sample population for this study were participants in the University of Arizona Student Health Center's Behavior Modification weight reduction program in the fall semester of 1985. This program was an individualized ten week program that focused on modifying diet and exercise patterns, with a major emphasis on calorie counting and recording. There was one other counselor besides myself involved in working with the subjects, with individuals meeting once a week at a scheduled time with the same counselor throughout the ten week period. However, the

format of the program was designed in such a way that certain topics were stressed each week and each client was given the same handouts and pamphlets at each session. This helped decrease the amount of bias between the counselors.

The total number of persons in the ten week program equaled 43 student and faculty members at the University of Arizona, ranging from age 18 to 58 years. The final sample size was only 33, indicating a 76.7% response rate, due to ten subjects who chose not to completely fill out the questionnaire and locus of control scales.

Measurement Instruments

In this study, data were collected through the use of a diet and weight history questionnaire, the Multidimensional Health Locus of Control scales and the Weight Locus of Control scale.

Diet and Weight History Questionnaire

This questionnaire, developed by the researcher, was designed to obtain a brief history regarding an individual's personal attitudes concerning diet, previous weight loss attempts and history of weight. Also, the questionnaire was used to seek information regarding what reasons were reported for why the subjects wanted to lose weight.

Multidimensional Health Locus
of Control (MHLC) Scale

The first instrument chosen to measure locus of control was the MHLC scale developed by Wallston et al. (1978). The scale, made up of the IHLC, PHLC and CHLC scales, consisted of a total of 18 items. Each scale was made up of six items, with the six items chosen for the PHLC scale being taken from both forms A and B of the original PHLC scale (Wallston et al., 1978). The other scales, IHLC and CHLC, were derived from the original six-item Form A of Wallston et al. (1978) IHLC and CLHC scales. A four point Likert-type scale measured responses according to the following categories: "strongly disagree," "disagree," "agree," and "strongly agree." The total range of scores for each scale was 6-24.

Initial reliability and validity testing was completed by the researchers on a sample size of 115 persons. Also, a separate item analysis was conducted on each of the three scales that make up the MHLC scale. After checking alpha reliabilities, Wallston et al. (1978) found values that illustrated internal consistency.

Weight Locus of Control (WLOC) Scale

The second instrument chosen to measure locus of control was the Weight Locus of Control scale developed by Saltzer (1982). This short, convenient scale is made up of

two internally worded statements and two externally worded statements. A four point Likert-type format was used to score each item consisting of "strongly disagree," "disagree," "agree" and "strongly agree." The total range of scores for the scale was 4-16.

Saltzer (1982) conducted reliability and validity tests on a sample size of 110 subjects. Internal consistency was revealed by the author after using Cronbach's alpha and test-retest reliability of the WLOC scale.

Data Collection

All participants in the University of Arizona Student Health Center's weight reduction program were given a questionnaire (including the locus of control scales and the diet and weight history questionnaire) in the first week of the program only if they consented to be in the study. All 43 participants agreed to take part in the study, and were asked to return the questionnaires their next scheduled appointment.

The questionnaires were assigned identification numbers and matched with the subject's name on a separate list. This information was kept in the possession of the investigator.

Several of the participants who did not return the questionnaire before the end of the program were mailed a

letter to encourage completion and return of the questionnaire in the self-addressed stamped envelope provided. Lastly, each individual who participated in the study were sent a thank you note.

Analysis of Data

Responses to the MHLC scales and WLOC scale were scored according to Wallston's et al. (1978) key to scoring and Saltzer's (1982) key to scoring, respectively.

The Statistical Package for the Social Sciences Computer Program (Nie et al., 1975) was used to determine distribution ranges, means and standard deviations for certain variables examined. The Pearson correlation coefficient, t-test and analysis of variance were chosen as the statistical formulas for data analysis.

RESULTS AND DISCUSSION

Interpretation of the results of this study, along with the relationship of the findings to the locus of control concept and the review of literature, are presented and discussed in detail in this chapter. Conclusions and recommendations for further study are also presented based upon the interpretations of the results.

The Sample Population

Data pertaining to demographic characteristics of the sample are presented in Table 1. Subjects ranged in age from 18 to 58 years, with 57.6% of the participants falling in the 20-29 age group. Only three of the subjects were male, with ages of 22, 50 and 58.

Amount of Weight Loss and Meetings Missed

As previously stated, patient noncompliance in a weight reduction program is a substantial obstacle to the achievement of successful weight loss. Several investigations have demonstrated that attendance is positively related to weight reduction (Mullen and Culjat, 1980).

Distribution of amount of weight loss achieved by the subjects are presented in Table 2. Data revealed that

Table 1. Distribution of University of Arizona Student Health Center's weight reduction program participants for two demographic variables.

Demographic Variable	Distribution of Participants				
Age	<u>18-19</u>	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>
N = 33	2	19	7	1	4
Sex	<u>Male</u>		<u>Female</u>		
N = 33	3		30		
<u>Ages:</u> 22, 50, 58					

N = Total number of participants reporting

Table 2. Distribution of amount of weight loss achieved by the participants in the University of Arizona Student Health Center's weight reduction program.* (N = 33)

Amount of Weight Loss (pounds)	Number of Participants	Percent of All All Participants
0 - 4.9	21	63.6
5 - 9.9	7	21.2
10 - 14.9	2	6.1
15+	3	9.1

* Total amount of weight loss after the 10-week weight reduction program had ended.

the majority of the subjects (63.6%) lost under five pounds throughout the ten-week program, while 21.2% lost between five to ten pounds.

Compliance for this study was defined as the extent to which an individual's behavior coincided with the prescribed program regimen, mainly keeping appointments. Table 3 presents the distribution of number of meetings missed by the subjects. Data showed that almost half the subjects (48.5%) did not miss any of their ten scheduled appointments throughout the program. Also, it should be noted that the three individuals who missed five or more meetings were classified as "drop-outs." Overall, the compliance rate for the 33 participants equated to 90.9%, which is very high for any type of weight reduction program.

Table 4 compares the amount of weight loss achieved by the subjects over the ten-week program to the number of meetings missed by the subjects. After completing a t-test comparing the participants who missed zero meetings to the participants who missed one or more meetings, a significant difference was found at the $p < .025$ level. This illustrates that attendance was positively related to weight loss, meaning that subjects who missed one or more meetings did not lose as much weight as those individuals who did not miss any appointments. This finding supports the suggestion

Table 3. Distribution of number of meetings missed by participants in the University of Arizona Student Health Center's weight reduction program.* (N = 33)

Meetings Missed**	Number of Participants	Percent of All Participants
0	16	48.5
1	7	21.2
2	2	6.1
3	3	9.1
4	2	6.1
5+	3	9.1

* Total number of meetings in the program was 10.

** Participants missing five or more meetings were classified as "drop-outs."

Table 4. Amount of weight lost in relation to meetings missed by the participants in the University of Arizona Student Health Center's weight reduction program. (N = 33)

Meetings Missed	Amount of Weight Lost (pounds)					X*	SD**
	0-4.9	5.0-9.9	10.0-14.9	15+			
0	7	4	2	3		7.59	8.34
1	5	2	-	-		2.08	2.28
2	2	-	-	-		2.00	2.83
3	3	-	-	-		1.67	2.47
4	1	-	-	-		5.88	2.65
5	3	-	-	-		1.16	1.26

* X = Mean

** SD = Standard Deviation

that efforts to increase patient attendance are critical to the program goal of achieving significant weight loss.

Personal Weight History

Data were collected to examine self-reported reasons why the participants wanted to lose weight and previous weight loss methods. The frequency of each reason and corresponding percentage of all subjects was calculated, and t-tests were performed on several of the variables to determine if any differences existed.

Reasons for Wanting to Lose Weight

Table 5 lists reasons cited in decreasing order for why participants wanted to lose weight. The most frequently reported reasons included: "Cosmetic," "To feel better about myself," and "Health concerns." Two other categories were also illustrated, in which the subjects chose two reasons, including "Cosmetic and To feel better about myself," and "Cosmetic and Health concerns." This data correlated with researchers who point out that obese individuals cite cosmetic and psychological stress far more frequently than other reasons for desiring weight loss. However, it was interesting to note that "Health concerns" was listed as the third most common reason indicated in this study. This may reflect the fact that the sample was from a

Table 5. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight. (N = 33)

Reason for Wanting to Lose Weight	Number of Participants Reporting Reason	Percent of All Participants
Cosmetic	10	30.3
To feel better about myself	7	21.2
Health concerns	5	15.2
Cosmetic and Health concerns	6	18.2
Cosmetic and To feel better about myself	3	9.1

college environment and therefore may have had more exposure to information regarding the risks of being overweight.

Table 6 presents data comparing the reasons indicated by the participants for why they wanted to lose weight and the amount of weight loss achieved by the subjects by the end of the ten-week program. As illustrated by the chart, it can be seen that the individuals who chose "To feel better about myself" lost the least amount of weight overall as compared to the other categories. A t-test that was performed to determine if any differences existed between this group as compared to the other four groups was not significant at the $p < .05$ level.

On the other hand, a t-test performed to determine if differences existed between individuals in the "Health concerns" category to the other groups demonstrated a difference at the $p < .10$ level. On the whole, these individuals lost more weight than any of the other categories. This trend suggests that individuals more concerned with the health risks of obesity may be inclined to be more motivated and may lose a greater amount of weight as compared to individuals who do not cite health as a reason for wanting to lose weight.

Comparison between reasons why the participants wanted to lose weight to number of meetings missed by the

Table 6. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight compared to the amount of weight loss achieved by the participants by the end of the ten-week program. (N = 33)

Reasons for Wanting to Lose Weight	Amount of Weight Loss*				X**	SD***
	0-4.9	5.0-9.9	10.0-14.9	15+		
Cosmetic	5	4	-	-	4.65	3.76
To feel better about myself	6	1	-	-	2.25	2.15
Health concerns	3	-	-	2	9.80	13.60
Cosmetic and Health Concerns	4	1	1	-	4.58	4.33
Cosmetic and To feel better about myself	1	1	-	1	7.40	8.54

* Number of individuals achieving weight loss

** X = Mean

*** SD = Standard Deviation

subjects were also completed. However, no relationship was demonstrated between these two variables.

During the first week of the program, calculations were completed on each individual to determine number of pounds above ideal body weight. Data in Table 7 compares these calculations to the reasons indicated by the subjects for why they wanted to lose weight. Reasons were grouped into either "Psychological concerns" or "Health concerns," and as can be seen in the table, the mean number of pounds above ideal body weight for "Health concerns" (46.25 pounds) was almost twice as large as the mean for "Psychological concerns" (25.84 pounds). A t-test was performed, and differences between the two groups were found to be significant at the $p < .025$ level. This finding suggests that persons who are considerably above ideal body weight are more concerned with the risks or health problems associated with being obese. Also, because these risks may be life threatening, losing weight for these individuals may become a very important goal in their life. As previously pointed out, a trend was seen of greater weight loss for the subjects who cited "Health concerns" as their main reason for wanting to lose weight compared to the others. However, it should be pointed out that these individuals who chose "Health concerns" weighed significantly more at the start of

Table 7. Reasons reported by participants in the University of Arizona Student Health Center's weight reduction program for why they wanted to lose weight compared to the number of pounds above ideal body weight of the participants at the beginning of the program. (N = 33)

Reason for Wanting to Lose Weight	Number of Pounds Above IBW*				
	0-19.9	20.0-39.9	40+	X**	SD***
Psychological Concerns	6	10	4	25.84	13.40
Health Concerns	2	6	3	46.25	34.76

* IBW = Ideal Body Weight

** X = Mean

*** SD = Standard Deviation

the program as compared to the other individuals. Therefore, losing more weight for this group may have been easier.

Previous Weight Loss Methods

Reported methods of previous weight loss attempts are presented in Table 8. The results illustrated that 66.6% of the subjects had previously used calorie counting in an attempt to lose weight, and 57.6% of the subjects had previously tried exercising to lose weight. Overall, all but two of the participants had tried one or more of the methods listed.

As pointed out in the chapter on Methodology, the major method of weight reduction used in this program was calorie counting and recording. Therefore, comparisons were completed between persons who had previously tried calorie counting and those who had not tried calorie counting to amount of weight loss and the number of meetings missed.

Data presented in Table 9 compares individuals who have or have not used calorie counting as a previous method in the attempt to lose weight with the amount of weight loss achieved by the subjects. Distribution of the subjects illustrated that 22 subjects had tried calorie counting, while 11 subjects had never attempted to count calories. Also, it can be seen from the table that a slight difference existed between the two groups, implying that individuals

Table 8. Previous weight loss methods reported by participants in the University of Arizona Student Health Center's weight reduction program.. (N = 33)

Method of Weight Loss Used	Number of Participants Indicating Method	Percent of All Participants
Calorie counting	22	66.6
Exercise	19	57.6
Fasting	12	36.4
Diet pills	9	27.3
Liquid protein	7	21.2
Weight watchers	5	15.2
Stillman	4	12.1
Atkins	4	12.1
Others	11	33.3
No previous attempts at weight loss	2	6.1

Table 9. Comparison of previous use or nonuse of calorie counting in an attempt to lose weight to amount of weight loss achieved by the participants in the University of Arizona Student Health Center's weight reduction program. (N = 33)

Calorie Counting Previously Used	Amount of Weight Loss*					X**	SD***
	0-4.9	5.0-9.9	10.0-14.9	15+			
Yes	13	5	2	2		5.59	7.11
No	8	2	0	1		3.77	5.09

* Number of individuals achieving weight loss

** X = Mean

*** SD = Standard Deviation

who had previously tried calorie counting were more successful at weight loss than those individuals who had never counted calories. However, the differences were not significant.

Comparisons between previous use or nonuse of calorie counting as a method of weight loss to number of meetings missed by the participants were also completed. No relationship was found between the two factors, illustrating that compliance was not related to an individual's previous calorie counting attempt.

Locus of Control

Multidimensional Health Locus of Control Scales (MHLC)

Table 10 presents the mean score, standard deviations and range of scores for the three MHLC scales. As illustrated by the mean scores, there was a tendency for the participants to score higher on the IHLC dimension as compared to the PHLC or CHLC scales. This trend is demonstrated by the distribution of scores shown in Table 11.

Weight Locus of Control Scale (WLOC)

The mean score, standard deviation and range of scores for the WLOC scale are presented in Table 12. Classification of participants as either internal or external by use of the calculated mean are presented in Table 13. Overall, 36.4% were classified as internal, while 63.6% were

Table 10. Multidimensional Health Locus of Control (MHLC) scales: means, standard deviations and range of scores obtained from the participants in the University of Arizona Student Health Center's weight reduction program.

MHLC Scale	N	Mean Score	Standard Deviation	Range of Scores*
IHLC	33	18.2	2.4	14-23
PHLC	33	11.4	2.8	6-15
CHLC	33	12.1	2.3	7-20

N = Total number of participants

IHLC = Internal Health Locus of Control

PHLC = Powerful Others Health Locus of Control

CHLC = Chance Health Locus of Control

* Total range of scores for each MHLC scale: 6-24

Table 11. Distribution of Multidimensional Health Locus of Control (MHLC) scores for the participants in the University of Arizona Student Health Center's weight reduction program.

MHLC Scale	N	Scores*		
		6-11.9	12-17.9	18-24
IHLC	33	0	15	18
PHLC	33	14	19	0
CHLC	33	11	21	1

N = Total number of participants

IHLC = Internal Health Locus of Control

PHLC = Powerful Others Health Locus of Control

CHLC = Chance Health Locus of Control

* A high score denotes a high belief in the dimension being measured by the particular scale.

Table 12. Weight Locus of Control (WLOC) scale: mean, standard deviation and range of scores obtained from the participants in the University of Arizona Student Health Center's weight reduction program.

MHLC Scale	N	Mean Score	Standard Deviation	Range of Scores*
WLOC	33	5.8	1.2	4-8

N = Total number of participants

* Total range of scores for each WLOC scale: 4-16

Table 13. Classification of participants in the University of Arizona Student Health Center's weight reduction program as either internal or external by use of the mean* of scores for the Weight Locus of Control (WLOC) scale. (N = 33)

WLOC Score	Number of Participants (percent of total)	Internal or External**
4	7 (21.2)	Internal
5	5 (15.2)	Internal
6	12 (36.4)	External
7	6 (18.2)	External
8	3 (9.1)	External

* Mean = 5.8

** Internal = scores falling below the mean of 5.8

External = scores falling above the mean of 5.8

classified as external. However, because the possible total range of scores for the WLOC scale was 4-16, participants as a whole scored in the internal direction of the scale. This is illustrated by the mean of 5.8.

Correlational Data

MHLC Intercorrelations

Intercorrelations of the IHLC, PHLC and CHLC scales derived from this study are presented and compared to the intercorrelation matrix of the MHLC scales reported by Wallston et al. (1978) in Table 14. In the current study, a slight negative correlation (-0.235) was found between the IHLC and CHLC scales, while a stronger negative correlation (-0.316) was demonstrated between the IHLC and PHLC scales. On the other hand, Wallston et al. (1978) showed a stronger negative association between the IHLC and CHLC scales (-0.343), but a positive correlation (0.111) between the IHLC and PHLC scales. Also, the intercorrelation between the PHLC and CHLC scales for this study showed a significant positive correlation of 0.662, while in comparison, Wallston et al. (1978) found a less positive correlation (0.171) between the PHLC and CHLC scales.

Overall, the intercorrelation matrix as depicted in Table 14 demonstrates that the IHLC, PHLC and CHLC are three distinct instruments, measuring different dimensions of the health locus of control concept. This is revealed by the

Table 14. Intercorrelations of the Multidimensional Health Locus of Control scales: results of the current study compared to results of Wallston et al. (1978).

Current Study Results/Wallston et al. (1978)		
	PHLC (A + B)	CHLC (A)
IHLC (A)	-0.316/0.111	-0.235/-0.343
PHLC (A + B)		0.662/0.171

IHLC (A) = Internal Health Locus of Control (Form A)

PHLC (A + B) = Powerful Others Health Locus of Control
(Forms A and B)

CHLC (A) = Chance Health Locus of Control (Form A)

p < .05

positive correlations found between the PHLC, CHLC, and by the slightly different negative correlations found between the IHLC scale and the PHLC and CHLC scales. Also, because the PHLC and CHLC scales did not correlate exactly with the IHLC scale implies that even though the PHLC and CHLC scales were similar to a certain degree in measuring externality, they still measured different dimensions of external control; powerful others and chance.

Lastly, differences observed in comparing the intercorrelation matrix of the current study with the intercorrelation matrix of Wallston's et al. (1978) study may be explained in part by the variations between the studies. For example, the current study used a shortened version of the MHLC scales, while Wallston and associates (1978) used the complete original scale. Also, there were 125 subjects with wide variations in backgrounds in the study completed by Wallston et al. (1978), while the current study had a sample size of only 33 student and faculty members of the University of Arizona.

WLOC Correlations with the MHLC Scales

Table 15 presents data correlating scores on the WLOC scale with scores on the IHLC, PHLC and CHLC scales. Data gathered by Saltzer (1982) is also presented in Table 15 to compare with results of the current study.

Table 15. Correlation between the Weight Locus of Control (WLOC) scale and the Multidimensional Health Locus of Control (MHLC) scales; results of the current study compared to results of Saltzer (1982).

	N	MHLC Scales		
		IHLC	PHLC	CHLC
WLOC (Current study)	33	-0.29	0.31	0.30
WLOC (Saltzer, 1982)	115	-0.30	0.11*	0.35

N = Total number of participants

IHLC = Internal Health Locus of Control

PHLC = Powerful Others Health Locus of Control

CHLC = Chance Health Locus of Control

$p < .05$

* Not significant at $p < .05$ level

Current study results indicated modest but significant correlations between the WLOC scale with the IHLC scale (-0.29), PHLC scale (0.31), and CHLC scale (0.30). Saltzer (1982) also found modest, but significant correlations between the WLOC scale with the IHLC scale (-0.30) and the CHLC scale (0.35), but found no significant relationship (0.11) between the WLOC scale and the PHLC scale. This lack of association can be explained by the fact that there are no items on the WLOC scale which specifically measure the powerful others dimension of externality. It should also be pointed out that the modest but significant correlations demonstrated between the WLOC scale and the MHLC scales suggest that the WLOC scale is measuring a dimension related to but not identical to the dimension measured by the MHLC scales (Saltzer, 1982). Therefore, the WLOC scale should be more useful in predicting success and/or completion in weight control programs as compared to the MHLC scales, due to the fact that the WLOC scale specifically measures locus of control with respect to weight.

Correlation Between MHLC Scales and Amount of Weight Loss

As shown in Table 16, no significant correlations were found when comparing the amount of weight loss to scores on the IHLC, PHLC and CHLC scales. These findings are supported by Tobias and MacDonald (1977), Manno and

Table 16. Correlation between scores on the locus of control scales of the participants in the University of Arizona Student Health Center's weight reduction program and amount of weight loss achieved by the participants.

	MHLC Scales			
	WLOC	IHLC	PHLC	CHLC
Weight Loss	-0.093*	-0.002*	0.057*	0.097*

MHLC = Multidimensional Health Locus of Control

IHLC = Internal Health Locus of Control

PHLC = Powerful Others Health Locus of Control

CHLC = Chance Health Locus of Control

WLOC = Weight Locus of Control

$p < .05$

* Not significant at $p < .05$ level

Marston (1972), and Paine (1980), whose studies revealed no significant relationships between weight loss and locus of control. However, as pointed out in the literature review, other studies utilizing the locus of control theory (Wallston et al., 1976; Balch and Ross, 1975) have shown significant correlations between amount of weight loss and an individual's orientation on locus of control. These contradictory findings support the suggestion that the MHLC scales are too broad and generalized a construct, and that a more specific measure of locus of control expectancies with respect to weight may better predict success and/or completion in a weight reduction program.

Correlation Between WLOC Scale and Amount of Weight Loss

Data presented in Table 16 demonstrates that no significant correlations exist between the amount of weight loss and scores on the WLOC scale. On the other hand, Saltzer's (1982) results showed a significant relationship between success in losing weight and scores on the WLOC scale. The current study may have failed to find significant correlations due to the small sample size and narrow variations of the population.

Correlation Between MHLC Scales and Number of Meetings Missed

Correlational data between the MHLC scales and number of meetings missed are presented in Table 17. However, no significant correlations were revealed. Here again, these findings are supported by several researchers (Monahan, 1972; Vincent et al., 1976), but are also contradictory to other previous investigations (Balch and Ross, 1975; Wallston et al., 1976).

Further correlations were completed using analysis of variance and the student's t-test. However, no significant relationships were demonstrated at the .05 level. Therefore, the MHLC scales were not found to be useful predictors of compliance to the weight reduction program.

One interesting point that reflects this finding was the fact that two out of the three subjects classified as drop-outs had high internal scores and low scores on the PHLC and CHLC scales. This illustrates that the MHLC scales are not appropriate to measure one's locus of control with respect to weight loss behavior.

Correlation Between WLOC Scale and Number of Meetings Missed

Table 17 presents data comparing scores on the WLOC scale and number of meetings missed by the subjects. Here again, no significant correlations were found. In comparing correlational data between the two different locus of

Table 17. Correlation between scores on the locus of control scales of the participants in the University of Arizona Student Health Center's weight reduction program and number of meetings missed by the participants.

	MHLC Scales			
	WLOC	IHLC	PHLC	CHLC
Missed Meetings	0.192*	-0.066*	-0.020*	-0.063*

MHLC = Multidimensional Health Locus of Control

IHLC = Internal Health Locus of Control

PHLC = Powerful Others Health Locus of Control

CHLC = Chance Health Locus of Control

WLOC = Weight Locus of Control

$p < .05$

* Not significant at $p < .05$ level

control measures, MHLC and WLOC, to completion or compliance to the program, Table 17 shows that even though there were no significant differences, the WLOC demonstrated a slightly higher correlation with meetings missed (0.192) than the MHLC scales (-0.066, 0.020, -0.063). However, even though one cannot recommend one scale over the other, it seems more appropriate and logical to use a weight-specific locus of control scale in studies dealing with weight control.

Distribution of Number of Meetings
Missed in Relation to WLOC
Internal or External Orientation

Table 18 presents data concerning number of meetings missed in relation to each subject's internal or external orientation derived from the WLOC scale. The major result of this distribution was the demonstration that the three subjects who missed five or more meetings were classified as external. Also, ten out of the 14 individuals who missed one to four meetings were classified as external. However, as previously pointed out, no significant correlations were found between WLOC scores and number of meetings missed. This finding is contradictory to Saltzer's (1982) study, which found a significant correlation between an individual's internal position on the WLOC scale and completion of a weight reduction program. The small sample size of the current study may account for the lack of association found between WLOC and compliance (meetings missed).

Table 18. Distribution of number of meetings missed by the participants in the University of Arizona Student Health Center's weight reduction program in relation to each participant's internal or external orientation as derived from the Weight Locus of Control (WLOC) scale.* (N = 33)

Number of Meetings Missed	Internal	External
0	8	8
1-4	4	10
5+	0	3

* Participants were classified as internal or external depending on their scores on the WLOC scale (see Table 13).

Limitations

Several limitations have been demonstrated for this study. First of all, the MHLC scales may be too broad and generalized to predict an individual's behavior in weight reduction. Secondly, the WLOC scale is very short and needs further testing of reliability and validity. Also, Saltzer (1982) suggested that expansion of the scale may help raise the relatively low measures of reliability that were found.

Further Use of Locus of Control in Weight Loss Studies

Even though locus of control appears to be a logical approach in predicting an individual's behavior in weight control, there are several theoretical and empirical reasons for questioning the latter concept. The majority of research investigating the use of locus of control in predicting success or completion to a weight reduction program has demonstrated only equivocal results, causing great difficulty in drawing any conclusions concerning the rationale behind the use of the measure.

One must remember that there are a number of other factors besides a person's locus of control orientation associated with success or completion of a weight loss program. These variables, including personal attitudes towards losing weight, social pressures for being thin, and how highly an individual values health or physical appearance all affect

how well an individual will fare in a weight reduction program. Also, dietary habits and preferences, which are primarily personal-type experiences, have a number of social and personal factors that go beyond the simple description of being internal or external. This was demonstrated in the current study, in which after working with the subjects for ten weeks, I obtained a greater understanding of the how's and why's of factors associated with an individual's desire to lose weight.

There are many facets of an individual that affects his motivation in weight control, and trying to generalize by saying that an internally oriented person will act one way and an externally oriented person will act in another way is too simplistic for the complex nature of the topic of weight control. All aspects of a person's lifestyle must be addressed and changed gradually over time. Also, one must remember that obesity may be due to physiological processes, rather than simply just psychological problems. Therefore, I believe the use of locus of control as a predictor variable to who will be successful in or complete a weight loss program should be considered only in conjunction with a number of other confounding variables. My experience suggests that a comprehensive program involving psychological support, nutrition and exercise education, and behavior

modification offers the best obesity treatment modality available today.

Conclusions

Descriptive Conclusions

In terms of compliance, this behavior modification weight reduction program was very successful overall. Only three subjects out of the 33 were classified as drop-outs, equating to a 90.9% compliance rate. This high rate of compliance may be attributed in part to the efforts of the counselors and the design of the program.

Similar to findings of Greenwood (1983) and other researchers, the most frequently reported reasons for why the participants wanted to lose weight included, "Cosmetic," "To feel better about myself," and "Health concerns." Also, the most frequently reported weight loss method previously used was calorie counting (66.6%).

Factors Associated with Weight Loss

Subjects who missed zero meetings lost more weight ($p < .025$) than subjects who missed one or more meetings. This illustrates that attendance is positively associated to weight loss.

Individuals choosing "Health concerns" as the main reason for why they wanted to lose weight lost significantly more weight ($p < .01$) than any other group. It should also

be pointed out that individuals choosing "Health concerns" also averaged a greater mean number of pounds above ideal body weight as compared to subjects who had chosen "Psychological concerns." A significant difference ($p < .025$) was found between the two groups.

Factors Not Associated with Weight Loss or Compliance

Individuals who chose "To feel better about myself" as the main reason for why they wanted to lose weight lost the least amount of weight overall, although this difference was not significant at the $p < .05$ level.

In comparing reasons reported by the participants for why they wanted to lose weight to number of meetings missed, no differences were found.

No significant relationship was demonstrated between subjects who have or have not used calorie counting as a previous method of weight control with the amount of weight loss achieved by the subjects. Lastly, no differences were found between previous use or non-use of calorie counting to number of meetings missed by the subjects.

Locus of Control Scales

Based on the results of the study, it can be concluded that neither the MHLC scales nor the WLOC scale were adequate predictors of success or compliance to a weight reduction program. No significant correlations were

demonstrated between the MHLC and WLOC scales and amount of weight loss and number of meetings missed.

Recommendations

Based on the results and conclusions of the present study, the following recommendations for further research have been made:

1. The sample population should be broadened and increased to improve hypothesis testing, and to further test the reliability of the locus of control scales.
2. Further studies investigating compliance in weight reduction programs should not use the MHLC scales because the scales are not weight specific.
3. Studies utilizing the WLOC scale should be conducted in a variety of weight reduction programs and with various populations of subjects to determine the generalizability of research with the WLOC scale (Saltzer, 1982).
4. The WLOC scale should be expanded to include questions related to "Powerful Others" external orientation. Examples of this may include: The amount of food I eat is influenced by my family and friends; My family and friends' concerns regarding my being overweight affects my eating and exercising habits. This will increase the specificity of the

scale to measure locus of control expectancies with respect to weight and weight loss behavior.

APPENDIX A

STUDY QUESTIONNAIRE

The program you have chosen to participate in is probably different from any other you may have tried before. Already you are well on your way to learning how to engineer your life so you can modify your eating habits and exercise routines.

As a graduate student in the field of human nutrition and dietetics, I am interested in obtaining information regarding personal attitudes concerning health, diet, exercise and weight reduction in relation to success in this weight reduction program. Your cooperation in filling out this questionnaire is completely optional, but will be greatly appreciated. I would also like to assure you of complete confidentiality. Thank you for your help.

Susanne Crowley

Name: _____

Age: _____

Sex: M F

PART I

1. How would you describe your present weight? (circle one)

very	slightly	about
overweight	overweight	average

2. How dissatisfied are you with the way you look at this weight?

- (1) completely satisfied
- (2) moderately satisfied
- (3) neutral
- (4) moderately dissatisfied
- (5) very dissatisfied

3. What are the attitudes of the following people about your attempt(s) to lose weight?

- 1 = negative (disapprove, resentful)
- 2 = indifferent (don't care, don't help)
- 3 = positive (encouraging, understanding)

Spouse or partner	1	2	3
Children	1	2	3
Employer	1	2	3
Friends	1	2	3

4. How do you feel your weight affects your daily activities? (circle one)

- (1) no effect
- (2) some effect
- (3) often interferes
- (4) extreme effect

5. How physically active are you? (circle one)

- (1) very active
- (2) active
- (3) average
- (4) inactive
- (5) very inactive

6. What do you do for physical activity and how often do you do it?

ACTIVITY - (swimming, jogging, walking, etc.)

AMOUNT/FREQUENCY - (minutes/day, weekly, miles, etc.)

Example: biking - 30min/day - 3X week _____

7. Please indicate what previous methods you have tried in the past to lose weight, the amount of weight lost in each method and comment on success or difficulties of the particular method.

Fasting _____

Exercise Program _____

Diet Pills _____

Calorie Counting _____

Stillman _____

Weight Watchers _____

Liquid Protein _____

Atkins _____

Others _____

8. Have you ever had a major mood change after a significant weight loss?
 Yes _____ No _____ If yes, indicate on the following checklist those changes:

- 1 not at all
 2 a little bit
 3 moderately
 4 quite a bit
 5 extremely

Depressed, sad, feeling unhappy?	1	2	3	4	5
Feeling anxious, nervous?	1	2	3	4	5
Feeling weak?	1	2	3	4	5
Feeling elated?	1	2	3	4	5
Feeling easily annoyed, irritated?	1	2	3	4	5
Feeling fatigued, worn out?	1	2	3	4	5
Being preoccupied with food and eating?	1	2	3	4	5
Feeling a lack of self-confidence?	1	2	3	4	5

9. What usually goes wrong with your weight loss attempts?

PART II

10. Describe your father's weight while you were growing up?
 (1) very overweight
 (2) slightly overweight
 (3) about average
 (4) slightly underweight
11. Describe your mother's weight while you were growing up?
 (1) very overweight
 (2) slightly overweight
 (3) about average
 (4) slightly underweight

12. Please describe your family attitudes toward food and eating while you were growing up and presently:

13. People learn about food and nutrition from many different sources. Please indicate how often you get information from each of these sources:

Family members	NEVER	SOMETIMES	VERY OFTEN
Friends	NEVER	SOMETIMES	VERY OFTEN
Grocery Store	NEVER	SOMETIMES	VERY OFTEN
Health Food Store	NEVER	SOMETIMES	VERY OFTEN
Newspaper/magazine	NEVER	SOMETIMES	VERY OFTEN
Books	NEVER	SOMETIMES	VERY OFTEN
Medical Doctor	NEVER	SOMETIMES	VERY OFTEN
TV/radio	NEVER	SOMETIMES	VERY OFTEN
Nutritionist/dietitian (college degree)	NEVER	SOMETIMES	VERY OFTEN
Health club/gym	NEVER	SOMETIMES	VERY OFTEN
Other_____	NEVER	SOMETIMES	VERY OFTEN

14. Please choose one of these responses for each statement on the basis of the following criteria:

- 4 strongly agree
3 agree
2 disagree
1 strongly disagree

My eating is influenced by the amount a companion eats_____

Watching someone else eat makes me hungry, even if I just had a meal_____

The presence of other people influences the amount of food I eat_____

I eat less if I think someone is watching me_____

When I'm around people who eat a lot, I am likely to eat more than usual_____

PART III

There are many attitudes concerning health and weight. Considering your own experiences, how do you feel about the following statements?

- | | | | | |
|---|----------------------|----------|-------|-------------------|
| 1. If I get sick, it is my own behavior which determines how soon I get well again..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 2. No matter what I do, if I am going to get sick, I will get sick..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 3. Having regular contact with my doctor is the best way for me to avoid illness..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 4. Most things that affect my health happen to me by accident..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 5. Whenever I don't feel well, I should consult a medically trained professional..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 6. I am in control of my own health..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 7. Other people have a lot to do with my staying healthy..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 8. When I get sick, I am to blame..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 9. Luck plays a bit part in determining how soon I will recover from an illness..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 10. Health professionals keep me healthy..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 11. My good health is largely a matter of good fortune..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |

- | | | | | |
|---|----------------------|----------|-------|-------------------|
| 12. The main thing that affects my health is what I myself do..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 13. If I take care of myself, I can avoid illness..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 14. The type of care I receive from other people is what is responsible for how well I recover from an illness..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 15. No matter what I do, I am likely to get sick..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 16. If it's meant to be, I will stay healthy.... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 17. If I take the right actions I can stay healthy..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 18. Following doctor's orders to the letter is the best way for me to stay healthy.... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 19. Whether I gain, lose or maintain my weight is entirely up to me..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 20. Being the right weight is largely a matter of good fortune..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 21. No matter what I intend to do, if I gain or lose weight, or stay the same in the near future is just going to happen..... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |
| 22. If I eat properly, and get enough rest and exercise, I can control my weight in the way I desire.... | STRONGLY
DISAGREE | DISAGREE | AGREE | STRONGLY
AGREE |

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