1984

Attempts, control and weight reduction :: an application of a theory of planned behavior.

Deborah E. Schifter

University of Massachusetts Amherst

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ATTEMPTS, CONTROL AND WEIGHT REDUCTION:
AN APPLICATION OF A THEORY OF PLANNED BEHAVIOR

A Thesis Presented
By
Deborah E. Schifter

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of
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Department of Psychology
ATTEMPTS, CONTROL AND WEIGHT REDUCTION:
AN APPLICATION OF A THEORY OF PLANNED BEHAVIOR

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By
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Approved as to style and content by:

Icek Ajzen, Chairperson of Committee

Arnold Well, Member

Morton Harmatz, Member

Seymour Berger, Department Head
Department of Psychology
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CHAPTER I
INTRODUCTION

Research over the past decade has shown that many behaviors of interest to social psychologists can be predicted from intentions. Studies of voting behaviors, reenlisting in the military, and using birth control pills, for example, have shown high correlations between intentions and behaviors (Ajzen and Fishbein, 1980). The limit of the intention-behavior relationship, however, depends upon the extent to which the behavior is under volitional control.

The present study addresses the question of predicting behaviors which are not under volitional control. If a person intends to perform a behavior, what are the mediating factors that determine actual performance of that behavior? Considering the problem of weight reduction, a behavior that is not completely under one's volitional control, I have assessed measures of the attempt to perform the behavior and the level of control as mediating variables in predicting successful behavioral performance.

Theory: An extension of TORA

The theory of reasoned action (TORA) presents a model for predicting behavior and understanding its determinants. According to the theory, a person's intention to perform a behavior is determined by the person's attitude toward performing the behavior and the per-
son's perception of the social pressures to perform, or not to perform, the behavior. The theory further postulates that when the behavior is under volitional control the intention is the immediate determinant of the behavior (Ajzen and Fishbein, 1980). See figure 1.

The theory states that the attitude toward performing a specific behavior is a function of the beliefs a person holds concerning the consequences of performing the behavior and the person's evaluation of those consequences. This can be expressed symbolically as

$$A_B \propto \sum b_i e_i$$  \hspace{1cm} (1)

where $A_B$ is the attitude toward performing the behavior, $b_i$ is the belief that the behavior will lead to a specific consequence, $e_i$ is the evaluation of that outcome on a good-bad scale, and $n$ is the number of salient beliefs the person has about performing the behavior. It has been shown that an individual's attitude toward an object is highly correlated with his beliefs about the object and the evaluation of those beliefs (Ajzen and Fishbein, 1980).

The general subjective norm is determined by the perceived expectations of specific referent individuals or groups and by the person's motivation to comply with those expectations. This can similarly be expressed as

$$SN \propto \sum b_{jm}$$  \hspace{1cm} (2)
where SM is the subjective norm, bj is the normative belief (the person's belief that the reference group or individual thinks he should or should not perform the behavior), mj is the motivation to comply with referent j, and k is the number of relevant referents. Empirical studies have also established high correlations between the general subjective norm and the sum of the normative beliefs and motivation to comply (Ajzen and Fishbein, 1980).

The attitude toward performing a behavior and the subjective norm are the two major determinants of a behavioral intention. The attitudinal and normative components are given empirical weights proportional to their relative importance for the specific behavior in question. From the attitude, subjective norm, and their relative weights, the behavioral intention can be predicted. The behavioral intention, in turn, determines behavioral performance. The relationships among these variables are symbolically represented by the following equation:

\[ B \sim I \alpha w_1 A_B + w_2 SM \]  

where B is the behavior, I is the behavioral intention, A_B is the attitude toward the behavior, SM is the subjective norm, and w_1 and w_2 are empirically determined weights.

The TORA model differs from earlier attitude-behavior theories in that it emphasizes correspondence between the assessed attitude and the observed behavior. Within the structure of the model, attitudes, subjective norms, intentions, and behaviors agree in terms of
action, target, context, and time. Strong attitude-behavior relations are generally obtained only under high correspondence between at least the action and the target (Ajzen and Fishbein, 1977).

The model has been shown successful in predicting a variety of intentions and behaviors. Studies have assessed the variables of the model with respect to using birth control pills (Ajzen and Fishbein, 1980), voting for a particular political candidate (Ajzen and Fishbein, 1980), signing up for an alcoholic treatment unit (McArdle, 1972), and reenlisting in the military (Shtilerman, 1982), among other applications. These studies have established high multiple correlations between attitudes and social norms and intentions, and high correlations between intentions and behaviors.

Many behaviors of interest to social psychologists, as those mentioned above, can be predicted with a high degree of accuracy from intentions to perform the behaviors in question. However, there are two factors that influence the magnitude of the intention-behavior relationship. First of all, the relationship depends upon the stability of the intention. When the intention is not completely stable, predictability of behavior decreases as the time between measuring intention and measuring behavior increases. Second, the relationship depends upon the degree to which carrying out the intention is completely under the individual's volitional control (Fishbein and Ajzen, 1975).

The stipulation that behavior must be under volitional control imposes strict limitations on the theory's range of application.
Many behaviors are strongly influenced by nonvolitional factors that are not taken into account by the theory of reasoned action.

A theory of planned behavior has been proposed to extend the TORA model to include behaviors that are not completely under volitional control. The extended model separates the attempt to perform a behavior from actual performance of the behavior. Actual success in performing a behavior is subject to factors that are often beyond one's control. Personal deficiencies and external obstacles can interfere with the performance of any behavior. The likelihood that such interference will block performance of the behavior depends upon the individual and the behavior in question. Beyond the TORA model, the theory of planned behavior suggests that the behavioral attempt interacts with the level of control to determine actual performance of the behavior. (See figure 2.) That is, the harder a person tries and the greater his control, the greater the likelihood that he will perform the behavior (Ajzen, 1982). Symbolically, this can be represented as follows:

\[ B \alpha B_t \times C \]  

where \( B \) is the behavior, \( B_t \) is the behavioral attempt, and \( C \) is the level of control.

The level of control is a function of a variety of factors, often depending on the behavior in question. Many behaviors require a level of skill, ability, or knowledge which is not readily accessible to everybody. When steps toward achieving the behavioral goal
are contrary to other desires or needs, determination and will-power are required to overcome the obstacles. At times, behavioral performance depends on mere luck or opportunity.

Often the level of control is tied to the development of an adequate plan of action directed toward achieving the behavioral goal. A plan is a set of intentions which, if carried out, should result in performance of the desired behavior. It might include the creation of additional incentives in order to increase motivation when obstacles are met, or contingency plans in case the intended sequence of actions is blocked.

In order to apply the theory of planned behavior to predict behaviors that are not under complete volitional control, we must devise a method of making a priori assessments of the level of control. The following list suggests some possible measures that could be obtained through the use of questionnaires.

1. **Experience.** If a person had previously decided to perform the behavior in question and had succeeded, we should expect him to succeed again. He has already demonstrated that he has the knowledge and will-power needed to perform the behavior, and is familiar with some of the obstacles he is likely to encounter.

2. **Development of a plan.** A plan for achieving the behavioral goal can be assessed for an individual's awareness of the obstacles he is likely to encounter in executing his plan. The plan might include additional incentives to
get him through difficult periods or contingency plans in case any given step fails.

3. Individual differences. Individuals differ in terms of their general ability to exercise control over their environment. A person's level of control over any given behavior might be related to this general control factor.

4. Behavior-specific factors. Performance of any given behavior might involve additional control factors particular to that behavior.

Working backwards in the model, since the attempt is under volitional control, it can be treated within the context of TORA. The attitude toward trying and the subjective norm determine the intention to try which in turn determines the behavioral attempt. A variation of equation 3 summarizes the relationships among the variables concerning the behavioral attempt:

\[ B_t \sim I_t \alpha w_1 A_t + w_2 SN_t \]  (5)

where \( B_t \) is the behavioral attempt, \( I_t \) is the intention to try, \( A_t \) is the attitude toward trying, and \( SN_t \) is the subjective norm with respect to trying.

When a behavior is not completely under volitional control, the possibility of failure must be considered already at the stage of attitude formation. The beliefs concerning the consequences of trying can be grouped according to possible success or possible failure. Applying equation 1 to these beliefs and their evaluations,
we can establish the attitude toward trying and succeeding separately from the attitude toward trying and failing. The attitude toward trying can then be represented as

$$A_t = p_s A_f + p_f A_f$$  \hspace{1cm} (6)$$

where $A_t$ is the attitude toward trying, $A_s$ is the attitude toward trying and succeeding, $A_f$ is the attitude toward trying and failing, and $p_s$ and $p_f$ are the subjective probabilities of succeeding and failing, respectively.

In this project I have obtained measurements of the variables included in the theory of reasoned action and the theory of planned behavior. Attitudes, subjective norms, intention, behavioral attempts, perceived control, and goal behavior have been measured in order to assess the applicability of the two theories. In addition, the project was designed to measure a variety of factors that were expected to reflect actual level of control.

**Application: Weight reduction.**

I have obtained these measures as applied to the question of losing weight. For a number of reasons I believe that this was an appropriate application for the study under consideration.

The question of weight is a widespread concern in our society. Wyden (1965) reported the following estimates from a poll conducted by the Alfred Politz Research Company in 1964:

- Some 9.5 million said that they were on diets,
- another 16.5 million reported that they were watching their
weight so they wouldn't gain, and still another 26.1 million expressed some concern about their waistlines (p. 1).

Much of the literature on obesity provides a very depressing view of the problem. Following an analysis conducted by Stunkard and McLaren-Hume (1959) of numerous studies of treatment of obesity, Stunkard (1958) concluded that "Most obese persons will not stay in treatment of obesity. Of those who stay in treatment most will not lose weight and of those who do lose weight, most will regain it" (p. 79). More recent reports indicate that there has been little improvement in clinical treatment of obesity since Stunkard and McLaren-Hume's review (Wing and Jeffery, 1979).

Stanley Schachter (1982) suggests that the situation is not as severe as these studies indicate. Schachter proposes that the previous conclusions are based on populations of self-selected subjects who actively seek help, neglecting all of the people who are able to cure themselves. Schachter's studies of nontherapeutic populations indicate that long-term self-cure of obesity is a relatively common event. Of the 162 people in his subject pool, 46 had a history of obesity and 40 of these had made an active attempt to lose weight. Of those 40 people, 62.5% succeeded and were no longer fat. An additional 10%, though still obese, had lost and kept off large amounts of weight.

The question to be asked in the context of the theory of planned behavior is how we can predict which of those people who are attempting to lose weight will succeed. The theory suggests that success
is related to the level of control a person has over his weight and how hard a person tries to perform weight reduction behaviors.

The issues of control which may influence success in losing weight include physiology, knowledge about how to lose weight, and determination or will-power. The general concepts are not specific to this particular application, but are parallel to control issues concerning many other behaviors. The results from this study are expected to provide insight into the theory in general and its application to other areas.

Hypotheses

1. The theory of reasoned action predicts that the intention to reduce weight will be highly correlated with the attitude and subjective norm with respect to weight reduction. Similarly, the intention to try to reduce weight will be highly correlated with the attitude and subjective norm with respect to trying to lose weight. Symbolically,

\[ I \alpha w_1 A_B + SN_t \]

Where \( I \) is the intention to reduce weight, \( A_B \) is the attitude toward reducing weight, and \( SN \) is the subjective norm with respect to reducing weight, and

\[ I_t \alpha w_t A_t + SN_t \]

where \( I_t \), \( A_t \), and \( SN_t \) are the intention, attitude, and subjective
norm with respect to trying to reduce weight, respectively.

2. The theory of reasoned action predicts that intention is the immediate determinant of behavior when the behavior is under volitional control. Since weight reduction is not completely under volitional control, however, the intention-behavior correlation is expected to be reduced. Under the theory of planned behavior, the determinants of successful weight reduction are expected to be the attempt to reduce weight and the level of control the individual has over his own weight.

3. Since the behavioral attempt is under volitional control, the intention to try to reduce weight is expected to correlate highly with the behavioral attempt. That is $I_t \propto B_t$.

4. The theory of planned behavior hypothesizes that $A_t$, the attitude toward trying, is determined by $A_s$, the attitude toward trying and succeeding, $A_f$, the attitude toward trying and failing, and $p_s$ and $p_f$, the subjective probabilities of succeeding and failing, respectively. It is expected that the data will indicate a positive relationship between $A_t$ and the sum $p_s A_s + p_f A_f$.

5. The interaction between subjects' own expectations of weight loss and self-knowledge will correlate highly with successful weight loss.
CHAPTER II

METHOD

Subjects.

Female students were recruited from undergraduate psychology classes at the University of Massachusetts. Full participation earned 3 course credits. Women who considered themselves to be overweight were encouraged to participate, but women of normal weight who wished to participate were also included.

Data acquisition.

The study was conducted in three stages.

During the first stage, subjects reported to the experimenter to be weighed and to fill out a set of questionnaires. (See appendix.) At this time attitudes, subjective norms, intentions, and levels of control were assessed.

The second stage was conducted during the six weeks following the initial questionnaire. Subjects monitored their behavior by filling out a weekly schedule. These schedules were used to assess behavioral attempts and changes in intention.

For the third stage, subjects reported to the experimenter six weeks after the first stage to weigh in and fill out a final questionnaire. These data provided assessments of goal-behavior performance and additional measures of individual differences that were expected to reflect levels of control.
Variable assessment.

The following variables were assessed directly from a set of bipolar scales contained in the initial questionnaire:

- $A_B$ -- Attitude toward reducing weight
- $SN$ -- Subjective norm
- $I$ -- Intention to reduce weight
- $A_S$ -- Attitude toward trying to reduce weight and succeeding
- $A_F$ -- Attitude toward trying to reduce weight and failing
- $A_T$ -- Attitude toward trying to reduce weight
- $SN_T$ -- Subjective norm with respect to trying
- $I_T$ -- Intention to try to reduce weight
- $P_S, P_F$ -- Subjective probabilities of success and failure, respectively, given an attempt to reduce weight

$BE$ -- Behavioral expectation

The weekly schedule provided assessment of the behavioral attempt, $B_t$. Subjects recorded performance of 18 specific weight reducing behaviors.

Four separate factors that were expected to reflect level of control were measured:

1) **Experience.** A portion of the first questionnaire addressed subjects' weight histories. Past success in intentionally reducing weight was expected to indicate a high level of control.

2) **Development of a plan.** Subjects' descriptions of the diet and exercise regimens they planned to undertake were rated
according to the following criteria: specificity, additional incentives, avoidance of temptation, and contingency plans.

3) Individual differences. Standard questionnaires were used to assess i) ego strength (Epstein\(^1\)), ii) state-vs. action-orientation (Kuhl, 1982), iii) self-efficacy (Shrauger and Rosenberg, 1970), iv) general self-knowledge (Ajzen\(^2\)), and v) self-knowledge with respect to weight reduction.

4) Physiology. Physiological problems were deduced from subjects' weight histories and from their present weights.

At stage 3, students returned to be weighed after the 6 week period. The number of pounds lost were used to assess B, actual behavioral performance.
CHAPTER III

RESULTS

Description of the Population

In response to the recruitment, 83 female undergraduate students participated in the first stage of the experiment. Seventy-six of the 83 continued to complete stages 2 and 3. The 7 who dropped out did not represent a random sample of the subject population. All 7 of them were below the median on the ego strength scale and scales of general self-knowledge and self-knowledge with respect to weight reduction. Five of the 7 were above the median of 12 pounds over their ideal weights and 5 of the 7 became overweight at age 17 or younger. All 7 expected to lose more than the median of 7 pounds.

The data from all 83 subjects were used to analyze the hypotheses that involved only variables that were measured at stage 1. The remainder of the analysis was based on the data from the 76 subjects who completed the study.

Of these 76 subjects, 56 considered themselves overweight and one subject considered herself slightly underweight. Of those who did not consider themselves overweight, 17 still believed that their ideal weights were from 1 to 7 pounds below their present weights. Those who considered themselves overweight were up to 35 pounds over their ideal weights. The median for the entire sample was a present.
weight 12 pounds over the ideal weight.

All subjects except 1 expected to lose some weight over the following 6 weeks. The mean expected weight loss was 9 pounds, the median was 8 pounds, and the maximum was 25 pounds.

At the final weigh-in at stage 3, the average weight loss was 2 pounds. Forty-four subjects had lost weight, from 1 to 11 pounds. Sixteen subjects had maintained the same weight, and 16 subjects had gained up to 5 pounds.

Table 1 summarizes the weight statistics for the sample of 76 subjects.

Tests of the Hypotheses

Hypothesis 1.

The theory of reasoned action predicts that the intention to reduce weight will be highly correlated with the attitude and subjective norm with respect to weight reduction. Similarly, the intention to try to reduce weight will be highly correlated with the attitude and subjective norm with respect to trying to lose weight. Symbolically, \( I \alpha w_1A_t + w_2SN_t \) and \( I_t \alpha w_1A + w_2SN_t \).

At stage 1, subjects answered items concerning their intentions, attitudes, and subjective norms with respect to weight reduction. (See items 1 to 5 on Part B of questionnaire 1.) Items were marked on a scale from 1 to 7 where 1 is in favor of weight reduction. Results are presented in Table 2.
<table>
<thead>
<tr>
<th>Weight Stage I</th>
<th>Ideal Weight</th>
<th>Amount over weight</th>
<th>Expected wgt. After 6 weeks</th>
<th>Weight Stage III</th>
<th>Expected weight loss</th>
<th>Weight Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>134</td>
<td>13</td>
<td>125</td>
<td>132</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Minimum</td>
<td>96</td>
<td>-1</td>
<td>91</td>
<td>90</td>
<td>0</td>
<td>-5</td>
</tr>
<tr>
<td>Maximum</td>
<td>175</td>
<td>35</td>
<td>160</td>
<td>175</td>
<td>25</td>
<td>2</td>
</tr>
</tbody>
</table>
The average attitude and intention were both heavily weighted toward weight reduction i.e. most subjects had positive attitudes towards weight reduction and intended to lose weight. Despite the restriction in range, however, the multiple correlation for the prediction of intentions from attitudes and subjective norms was quite high (R=.61, p < .001); both $A_B$ and SN were found to make a significant contribution to the prediction.

At stage 1, subjects also answered items concerning their attitudes, subjective norms and intentions with respect to trying to reduce weight. (See items 8 to 12 on Part B of Questionnaire 1.) The formats were identical to those items used to verify the first part of the hypothesis. Table 3 summarizes the results.

At .58, the multiple regression coefficient is still significant with p < .001. Again, the regression weights were significant for both predictors.

**Hypothesis 2.**

The theory of reasoned action predicts that intention is the immediate determinant of behavior when the behavior is under volitional control. Since weight reduction is not completely under volitional control, however, the intention-behavior correlation is expected to be reduced. Under the theory of planned behavior, the determinants of successful weight reduction are expected to be the attempt to reduce weight and the level of control the individual has over her own weight.
Table 2
Results of Multiple Regression Analyses on Intentions, Attitudes and Subjective Norms with Respect to Reducing Weight.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Zero order correlation with I</th>
<th>Regression weights</th>
<th>Multiple R</th>
</tr>
</thead>
<tbody>
<tr>
<td>A_B</td>
<td>1.4</td>
<td>.64</td>
<td>.58**</td>
<td>.50**</td>
<td>.61**</td>
</tr>
<tr>
<td>SN</td>
<td>3.0</td>
<td>1.5</td>
<td>.40**</td>
<td>.20*</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>2.0</td>
<td>1.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

** p < .001
* p < .05
Table 3

Results of Multiple Regression Analyses
on Intentions, Attitudes, and Subjective Norms
with respect to Trying to Reduce Weight

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Zero order correlation with $I_t$</th>
<th>Regression weights</th>
<th>Multiple $R$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_t$</td>
<td>1.6</td>
<td>.82</td>
<td>.50**</td>
<td>.42**</td>
<td>.58**</td>
</tr>
<tr>
<td>$SN_t$</td>
<td>3.0</td>
<td>1.5</td>
<td>.41**</td>
<td>.30*</td>
<td></td>
</tr>
<tr>
<td>$I_t$</td>
<td>1.9</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

** $p < .001$
* $p < .005$
In contrast to previous applications of the theory of reasoned action in which behaviors were under volitional control and high intention-behavior correlations were observed, the correlation between the intention to reduce weight and actual weight reduction was quite low. The correlations were computed using two different indices of weight loss: i) the number of pounds lost over the six week period and ii) the number of pounds lost divided by the number of pounds subjects expected to lose as stated at stage 1. The correlations between the intention to reduce weight and the two weight loss indices were .20 (p < .05) and .19 (p < .05), respectively. The correlations between the intention to try to reduce weight and the weight loss indices were .27 (p < .01) and .26 (p < .01), respectively.

Since the correlation between the two weight loss indices was .86 at p < .001, only the second index, the ratio between the number of pounds lost over the six week period and the number of pounds subjects initially expected to lose, will be used in the remainder of the analysis.

Certain sub-populations showed stronger intention-behavior correlations than the correlation for the overall population. Groups separated according to number of pounds overweight, the age at which they became overweight, and the self-efficacy scale showed significant differences between the correlations. The different correlations may be an artifact resulting from differential standard deviations, for, as seen in Table 4, the groups with the higher correla-
Table 4

Standard Deviations of and Correlations Between the Intention to Try to Reduce Weight and the Weight Loss Index for Sub-Populations

<table>
<thead>
<tr>
<th></th>
<th>intention to try</th>
<th>weight loss index</th>
<th>correlation between intention to try and weight loss index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Deviations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entire sample</td>
<td>1.02</td>
<td>0.56</td>
<td>0.26</td>
</tr>
<tr>
<td># of pounds over desired weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12 lbs</td>
<td>1.18**</td>
<td>0.65**</td>
<td>0.45</td>
</tr>
<tr>
<td>&gt;12 lbs</td>
<td>0.78**</td>
<td>0.43**</td>
<td>-0.14</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;17 yrs</td>
<td>1.13*</td>
<td>0.58</td>
<td>0.42</td>
</tr>
<tr>
<td>&gt;17 yrs</td>
<td>0.83*</td>
<td>0.48</td>
<td>-0.25</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>1.04</td>
<td>0.64*</td>
<td>0.41</td>
</tr>
<tr>
<td>low</td>
<td>1.02</td>
<td>0.47*</td>
<td>0.09</td>
</tr>
<tr>
<td>Self-knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>1.06</td>
<td>0.60</td>
<td>0.30</td>
</tr>
<tr>
<td>low</td>
<td>1.00</td>
<td>0.51</td>
<td>0.23</td>
</tr>
</tbody>
</table>

** Standard deviations differ at \( p < .01 \)

* Standard deviations differ at \( p < .05 \)
tions also show higher standard deviations for the two variables. However, there may also be a theoretical explanation for these results.

Low intention-behavior correlations were expected when the behavior is not under volitional control. The higher correlations in some sub-populations may be a reflection of a higher level of control. It stands to reason that people who are less overweight, who became overweight at a later age, and who score higher on the self-efficacy scale have greater control over their ability to lose weight.

I have shown that when applying the theory of reasoned action to weight reduction, we can successfully predict intentions from attitudes and subjective norms. However, the theory breaks down when using the intention to predict behavior for the entire population. Breaking the sample into sub-populations may suggest that intention is a better predictor of behavior for those subjects who display a higher level of control. Yet, the correlations for these sub-populations, at .41 to .45, are considerably lower than the correlations of .70 to .90 that have been observed for behaviors that are completely under volitional control (Ajzen and Fishbein, 1980). The following analysis was structured to identity other determinants of weight loss.

A. Behavioral attempt

During stage 2, subjects were asked to monitor their weight re-
duction behaviors on a weekly basis. They were given schedules of 24 items including exercising and dieting behaviors. (See Questionnaire 2 in the Appendix.) Each week they were to rate to what extent they performed each of the behaviors on a 1 to 5 scale. Item analysis indicated that those behaviors that did not directly concern exercising or dieting did not correlate with the overall index. Therefore, the behavioral attempt was measured with two indices, an exercising index and a dieting index. The exercising behaviors were:

1) I avoided long periods of inactivity (watching TV, just sitting around, etc.).
2) I did exercise such as jogging, calisthenics, etc., on a regular basis.
3) I walked wherever possible instead of riding the bus, driving a car or riding an elevator.

The reported frequencies with which these behaviors were performed were summed to provide the exercising index.

The following dieting behaviors were assessed:

1) I avoided snacking between meals and in the evenings.
2) I cut down on all starchy foods (sweets, bread, etc.).
3) I decreased my food intake in general by eating lighter meals, not having seconds, and not overeating.
4) I ate on a consistent and regular schedule.
5) I refrained from buying sweets or snacks that might tempt me at home.
Again, reported frequencies were summed to provide a dieting behavior index.

To begin the analysis of the determinants of weight loss, I considered the performance of the specific dieting and exercising behaviors. A regression procedure was performed with weight loss as the dependent variable and the dieting and exercising indices as the two independent variables. The resulting multiple correlation coefficient was .40 (p < .001). (See Table 5). The measure of the behavioral attempt did significantly contribute as a source of variance to the weight loss index, but further analysis indicates that we can identify additional significant contributors.

B. Development of a Plan

At stage 1, subjects were asked an open-ended question to describe their plans of action, that is how they would go about reducing weight if they intended to do so. (See Questionnaire 1, Part C.) Plans were then rated according to the number of specific considerations they addressed concerning diet, exercise, motivation and contingencies. One point was given for each of the following actions addressed:

1) eat less
2) count calories
3) cut out specific foods
4) refrain from eating at specific times
5) eat specific foods
6) eat at a specific time
Table 5

Results of Multiple Regression Analyses with the Weight Loss Index as the Dependent Variable, Dieting Behaviors and Exercising Behaviors Entered at Step 1, and Plan Development Entered at Step 2.

<table>
<thead>
<tr>
<th></th>
<th>Zero order correlation</th>
<th>weights step 1</th>
<th>Multiple R</th>
<th>Weights step 2</th>
<th>Multiple R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dieting behaviors</td>
<td>.40*</td>
<td>.38</td>
<td></td>
<td>.37</td>
<td></td>
</tr>
<tr>
<td>Exercising behaviors</td>
<td>.22</td>
<td>.07</td>
<td>.41**</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Plan</td>
<td>.29</td>
<td></td>
<td>.23</td>
<td>.47**</td>
<td></td>
</tr>
</tbody>
</table>

* p < .01
** p < .001
avoid temptation
exercise more
do a particular kind of exercise
exercise for a given length of time
exercise a certain number of times per week
exercise at a particular time of day
join a group or a friend
weigh-in regularly
provide contingencies
watch out for a specific problem.

The assumption was that in developing a plan, subjects consider the actions they will have to perform in order to reduce weight. They consider how to incorporate weight reduction behaviors into their daily lives and how to overcome the difficulties they will encounter. Subjects who have developed a plan are less likely to be taken by surprise and more likely to perform weight reduction behaviors in a rigorous and disciplined manner.

The importance of the plan is reflected in its correlation with the intention to try to reduce weight. The intention-plan correlation of .38 in the overall population is higher than the intention-exercising correlation of .09 and the intention-dieting correlation of .17. We might consider developing a plan of action as an additional measure of behavioral attempt. However, as shall be seen later, the development of an explicit plan of action is important for only a portion of the population--those who have not successfully reduced
weight in the past.

To study the effect of plan development on successful weight loss, the plan index was added as an independent variable to the regression equation after the behavior indices had already been accounted for. The plan index significantly contributes as a source of variance, raising the multiple correlation to .47. (See Table 5).

C. Control Scales

Other variables that were expected to reflect the level of control with respect to weight reduction were physiology, past experience, and individual differences. These variables were measured as follows:

a. Physiology

1. Number of pounds over desired weight. (Obtained from present weight and item 11 on Part A of Questionnaire 1.) The sample was divided at the median of 12 pounds.

2. Age at which subject became overweight. (Items 14 and 15 on Part A of Questionnaire 1.) The two groups were those subjects who became overweight at age 17 or younger (during or prior to adolescence) and those who became overweight later than 17 years.

b. Past experience--Subjects were divided into two groups: 1) subjects who had in the past successfully lost as many pounds as they expected to lose this time, and 2) sub-
jects who had never before tried to reduce weight and subjects who had tried but had not lost as many pounds as they expected to lose this time. (Obtained from present weight and items 1, 2, and 18 on Part A of Questionnaire 1.)

c. Individual differences--standardized scales were used to assess the following:

1. Action- vs. state-orientation (Items 1-24 on Part D of Questionnaire 3)
2. Ego strength (Items 33-40 on Part D of Questionnaire 1)
3. Self-efficacy (Items 1-12 on Part E of Questionnaire 3)
4. General self-knowledge (Items 13-32 on Part D of Questionnaire 1)
5. Self-knowledge with respect to weight reduction (Items 9-12 on Part D of Questionnaire 1)

The five individual difference scales were analyzed for reliability (see Table 6) and correlations between scales (see Table 7).

The sample was divided into two groups along each of the 8 parameters. The correlations of weight loss with the dieting, exercising, and planning indices for each group are shown in Table 8.

Correlations between weight loss and dieting behavior all differed in the expected directions. That is, groups that had more control along each of the 8 parameters had a stronger correlation between the attempt to diet and success at reducing weight. The correlations are significantly different among groups separated accord-
Table 6
Results of Reliability Tests on Individual Difference Scales

<table>
<thead>
<tr>
<th>Scale Description</th>
<th># of items</th>
<th># of cases</th>
<th>Cronbach (\alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action vs. State-or Ego strength</td>
<td>24</td>
<td>76</td>
<td>.76</td>
</tr>
<tr>
<td>Ego strength</td>
<td>8</td>
<td>83</td>
<td>.75</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>12</td>
<td>76</td>
<td>.83</td>
</tr>
<tr>
<td>General self-knowledge</td>
<td>20</td>
<td>83</td>
<td>.83</td>
</tr>
<tr>
<td>SK wrt weight reduc</td>
<td>4</td>
<td>83</td>
<td>.63</td>
</tr>
</tbody>
</table>

Table 7
Correlations between Individual Difference Scales

<table>
<thead>
<tr>
<th></th>
<th>Ego strength</th>
<th>Self-efficacy</th>
<th>General self-knowledge</th>
<th>Self-knowledge with respect to weight reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action-vs. state-orientation</td>
<td>.3808 (76)</td>
<td>.5627 (76)</td>
<td>.5643 (76)</td>
<td>.4289 (76)</td>
</tr>
<tr>
<td>Ego strength</td>
<td>.4334 (76)</td>
<td>.5923 (76)</td>
<td>.5277 (76)</td>
<td></td>
</tr>
<tr>
<td>self-efficacy</td>
<td></td>
<td>.5976 (76)</td>
<td>.4804 (76)</td>
<td></td>
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<tr>
<td>General self-knowledge</td>
<td></td>
<td></td>
<td></td>
<td>.4523 (76)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 8

Correlations between Dieting, Exercising, and Plan Development with Weight Loss Index for Sub-Populations.

<table>
<thead>
<tr>
<th></th>
<th>Diet-Weight Loss</th>
<th>Exercise-Weight Loss</th>
<th>Plan-Weight Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entire Sample</strong></td>
<td>.4031</td>
<td>.2157</td>
<td>.2883</td>
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<tr>
<td>Physiological Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lbs. over desired weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>less than 12</td>
<td>.5691*</td>
<td>.2475</td>
<td>.4072</td>
</tr>
<tr>
<td>12 or more</td>
<td>.2734*</td>
<td>.2046</td>
<td>.1780</td>
</tr>
<tr>
<td>age became overweight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>older than 17</td>
<td>.3285</td>
<td>.2609</td>
<td>.3428</td>
</tr>
<tr>
<td>17 or younger</td>
<td>.3189</td>
<td>.0166</td>
<td>.1240</td>
</tr>
<tr>
<td>Past experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>.4216</td>
<td>.3294</td>
<td>.1759</td>
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<tr>
<td>no</td>
<td>.3750</td>
<td>.0758</td>
<td>.3969</td>
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<tr>
<td>Individual Differences</td>
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<td></td>
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<tr>
<td>action vs. state orientation</td>
<td>.4523</td>
<td>-.0002*</td>
<td>.3460</td>
</tr>
<tr>
<td>state-oriented</td>
<td>.3886</td>
<td>.4147*</td>
<td>.2861</td>
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<tr>
<td>ego strength</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>high</td>
<td>.4616</td>
<td>.1344</td>
<td>.3240</td>
</tr>
<tr>
<td>low</td>
<td>.3454</td>
<td>.2847</td>
<td>.2457</td>
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<tr>
<td>self efficacy</td>
<td></td>
<td></td>
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<tr>
<td>high</td>
<td>.5716*</td>
<td>.2688</td>
<td>.4011</td>
</tr>
<tr>
<td>low</td>
<td>.2433*</td>
<td>.1309</td>
<td>.1464</td>
</tr>
<tr>
<td>general self-knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>.5536*</td>
<td>.2190</td>
<td>.3864</td>
</tr>
<tr>
<td>low</td>
<td>.1873*</td>
<td>.1625</td>
<td>.1107</td>
</tr>
<tr>
<td>SK wrt weight loss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>.4986</td>
<td>.2222</td>
<td>.3102</td>
</tr>
<tr>
<td>low</td>
<td>.3002</td>
<td>.2038</td>
<td>.2526</td>
</tr>
</tbody>
</table>

*The difference between the correlations of the two groups is significant at \( p < .05 \).
ing to the number of pounds overweight, the self-efficacy scale and the general self-knowledge scale.

Most of the scales show the same effect for the weight loss-exercising correlations. However, the action- vs. state-orientation scale showed the opposite effect.

When considering the zero-order correlations between the weight-loss index and the planning index, all groups having more control exhibited higher correlations, except for one. The pattern reversed between the groups separated according to past experience. Though, this, too, should be expected. Subjects who have successfully lost weight in the past are already familiar with the steps that must be taken in order to reach their goals. For these subjects, it is unnecessary to explicitly spell out a plan of action.

Multiple correlations with the weight loss index as the dependent variable are shown in Table 9. Except for the action- vs. state-orientation scale which showed virtually no effect, the multiple correlation coefficients of the weight loss index with the behavioral attempt i.e. the dieting and exercising indices all changed in the expected direction. That is, groups having more control exhibited higher correlations.

The pattern continued when the planning index was added as an independent variable to the regression equation. Planning contributed as a significant source of variance for all groups having more control--except for one. The group of subjects who had previously lost as much weight as they expected to lose now did not have any
Table 9
Results of Multiple Regression Analyses on Sub-Populations

Multiple Correlation of weight loss with dieting and exercising behaviors

<table>
<thead>
<tr>
<th></th>
<th>With planning index and interaction variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Entire sample</td>
<td>75</td>
</tr>
<tr>
<td>Physiology</td>
<td></td>
</tr>
<tr>
<td>lbs. over desired weight</td>
<td></td>
</tr>
<tr>
<td>&lt; 12</td>
<td>34</td>
</tr>
<tr>
<td>≥ 12</td>
<td>41</td>
</tr>
<tr>
<td>age</td>
<td></td>
</tr>
<tr>
<td>&gt; 17</td>
<td>46</td>
</tr>
<tr>
<td>≤ 17</td>
<td>29</td>
</tr>
<tr>
<td>Past Experience</td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>38</td>
</tr>
<tr>
<td>no</td>
<td>37</td>
</tr>
<tr>
<td>action-vs state</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>36</td>
</tr>
<tr>
<td>low</td>
<td>39</td>
</tr>
<tr>
<td>ego</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>39</td>
</tr>
<tr>
<td>low</td>
<td>36</td>
</tr>
<tr>
<td>self-efficacy</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>37</td>
</tr>
<tr>
<td>low</td>
<td>38</td>
</tr>
<tr>
<td>general self-knowledge</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>37</td>
</tr>
<tr>
<td>low</td>
<td>38</td>
</tr>
<tr>
<td>self-knowledge</td>
<td></td>
</tr>
<tr>
<td>with respect to weight</td>
<td></td>
</tr>
<tr>
<td>high</td>
<td>37</td>
</tr>
<tr>
<td>low</td>
<td>38</td>
</tr>
</tbody>
</table>

*The difference between the correlations of the two groups is significant at p < .05.
increase in the multiple correlation coefficient when the planning index was added. The group in which the planning index made the greatest contribution is the group of subjects who expected to lose more weight than they ever had before i.e. those who did not have an implicit plan based upon past experience.

The multiple correlation coefficients differed significantly between groups separated according to amount overweight, the self-efficacy scale, and the general self-knowledge scale.

Finally I considered the interaction effects between the behavioral attempt and the individual difference scales that had significant effects. I multiplied the dieting and exercising indices by the scores from the self-efficacy and self-knowledge scales, producing 4 additional variables. For the first 7 groups in Table 9--the entire sample, and groups differing in number of pounds overweight, age they became overweight, and past experience--the 4 new variables were entered into the regression equation after the behavioral and planning indices had been accounted for. These results are also shown in Table 9.

The behavioral attempt-individual difference interaction significantly contributed to the multiple regression coefficient for the less overweight group and the group that became overweight at a later age. The additional variables raised the coefficient for the more overweight group and the group that became overweight at a younger age, but the contributions were not significant.

The behavioral attempt-individual difference interaction also
significantly contributed to both the group that had past experience with successful weight loss and the group that did not have past experience with reducing as much as they wanted to. It is interesting to note that the independent variables—the behavioral indices, the planning index, and the behavior-individual difference interaction—are equally successful in predicting weight loss for the two groups, but the variables are used differently. The experienced group does not use a plan, but exercise correlates highly with weight loss. In the inexperienced group, development of a plan is the stronger predictor.

In summary, analysis of the determinants of successful weight loss lends support to the theory of planned behavior. The behavioral attempt and the level of control are significant predictors of behavioral performance. For this application, physiological factors, self-knowledge, and self-efficacy were the most effective measures of the level of control. Development of a plan also proved to be a significant predictor, particularly for those subjects who had not previously performed the behavior.

It should be noted that the previous analysis examined the predictability of weight loss from other variables. It does not, in itself, indicate which groups were more successful at reducing weight. Indeed, as shown in Table 10, none of the groups differed significantly either in the number of pounds lost or in the weight loss index.
Table 10
Actual and Relative Weight Loss for Sub-Populations

<table>
<thead>
<tr>
<th></th>
<th>Actual weight loss</th>
<th>Relative weight loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>SD</td>
</tr>
<tr>
<td>Amount ≤ 12 lbs over</td>
<td>1.51</td>
<td>3.32</td>
</tr>
<tr>
<td>overweight ≥ 12 lbs over</td>
<td>1.86</td>
<td>3.49</td>
</tr>
<tr>
<td>Age became &gt; 17 years</td>
<td>1.0</td>
<td>3.40</td>
</tr>
<tr>
<td>overweight ≤ 17 years</td>
<td>2.86</td>
<td>3.38</td>
</tr>
<tr>
<td>Past experience yes</td>
<td>2.03</td>
<td>3.81</td>
</tr>
<tr>
<td>Past experience no</td>
<td>1.37</td>
<td>3.08</td>
</tr>
<tr>
<td>Action-vs state-orientation</td>
<td>high</td>
<td>1.79</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>1.56</td>
</tr>
<tr>
<td>Ego strength</td>
<td>high</td>
<td>2.23</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>1.06</td>
</tr>
<tr>
<td>Self efficacy</td>
<td>high</td>
<td>2.13</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>1.21</td>
</tr>
<tr>
<td>General self-knowledge</td>
<td>high</td>
<td>2.16</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>1.18</td>
</tr>
<tr>
<td>Self-knowledge with respect</td>
<td>high</td>
<td>1.87</td>
</tr>
<tr>
<td>to weight loss</td>
<td>low</td>
<td>1.47</td>
</tr>
</tbody>
</table>
to be slender, and consequently, they are likely to always have in mind that they intend to reduce weight. The response to the questionnaire at stage 1 may have reflected that constant desire without providing any additional incentive actually to attempt losing weight.

Dividing the sample population into two groups, those less than 12 pounds away from their ideal weights and those 12 or more pounds over their ideal weights, supports this suggestion, as shown in Table 11. Although the differences are not significant, the means indicate that the group that is more overweight state their intentions to try to lose weight more strongly, but perform fewer of the behaviors. Furthermore, the more overweight group has a lower standard deviation of intention to try to reduce weight.

Based on the exercising index, the correlations between intention and attempt is -.01 for the more overweight group and .26 for the less overweight group. Based on the dieting index, the correlation between intention and attempt is -.01 for the more overweight group and .46 for the less overweight group. The difference between the latter correlations is significant at \( p < .025 \). It is unclear, however, if the different correlations are artifacts resulting from the different standard deviations of intention in the two groups, or if it is a true reflection of how the two groups act on their intentions.
Hypothesis 3

Since the behavioral attempt is under volitional control, the intention to try to reduce weight is expected to correlate highly with the behavioral attempt. That is $I_t \alpha B_t$.

As described above, the behavioral attempt was measured with two indices, a dieting index and an exercising index. Contrary to hypothesis 3, correlations between the intention to try to reduce weight and the behavioral attempts were very low: .09 with the exercising index and .17 with the dieting index.

The low $I_t - B_t$ correlations can be partially understood within the theory of reasoned action, for there are two points that address this situation:

i. The intention we are considering is the intention to try to reduce weight, which does not match the specific behaviors we are using to assess the behavioral attempt. Subjects who intended to try to reduce weight may have performed other behaviors reflecting their attempts.

ii. The intentions were found to be unstable over time. The correlation between the initial intention to try and the intention to try when measured over the last 3 weeks of stage 2 was .15. The unstable correlations are exacerbated by the fact that the standard deviations of the intentions were low.

In addition to these technical difficulties, we might consider the subject population and the issue under study. Within our society, overweight women are constantly being reminded of their desire
<table>
<thead>
<tr>
<th>Intention to try</th>
<th>&lt; 12 LBS overweight</th>
<th>≥ 12 lbs overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>2.09</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>1.18</td>
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<tr>
<td>Exercising index</td>
<td>Mean</td>
<td>66.74</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>10.77</td>
</tr>
<tr>
<td>Dieting index</td>
<td>Mean</td>
<td>105.06</td>
</tr>
<tr>
<td></td>
<td>Standard Deviation</td>
<td>16.26</td>
</tr>
<tr>
<td>Zero-order Correlations</td>
<td>Intention to try with exercising index</td>
<td>.26</td>
</tr>
<tr>
<td></td>
<td>Intention to try with dieting index</td>
<td>.46</td>
</tr>
</tbody>
</table>
Hypothesis 4

The theory of planned behavior hypothesizes that $A_t$, the attitude toward trying to reduce weight, is determined by $A_s$, the attitude toward trying and succeeding, $A_f$, the attitude toward trying and failing, and $p_s$ and $p_f$, the subjective probabilities of succeeding and failing, respectively, given an attempt. A positive correlation was expected between $A_t$ and the sum $p_s A_s + p_f A_f$.

At stage 1, subjects answered questions concerning their attitudes toward trying to reduce weight and succeeding, $A_s$, and toward trying to reduce weight and failing, $A_f$, in a format identical to the other attitude items (items 6 and 7 in Part B of Questionnaire 1). They were also asked to indicate, on a scale from 0 to 100, the probability that they would lose weight if they were to try. (Items 15 and 16 of Questionnaire 1, Part B were averaged.) This provided a measure of $p_s$. The probability of failing given an attempt was calculated as $p_f = 100 - p_s$. Results are summarized in Table 12.

The zero-order correlation between $A_t$ and $A_s$ at .49 indicates that $A_s$ alone accounts for a significant portion of the variance of $A_t$. Indeed, it is reasonable to expect that a positive attitude toward trying and succeeding would indicate a positive attitude toward trying. The correlation of $A_t$ with $A_f$, however, is negative i.e. the more strongly positive the attitude toward trying, the more strongly negative the attitude toward trying and failing. This
Table 12
Results of Multiple Regression Analyses on Attitude Toward Trying, Attitude Toward Trying and Succeeding, and Attitude Toward Trying and Failing

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>correlation with $A_t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_s$</td>
<td>1.3</td>
<td>.56</td>
<td>.49**</td>
</tr>
<tr>
<td>$A_f$</td>
<td>5.4</td>
<td>1.24</td>
<td>-.28*</td>
</tr>
<tr>
<td>$p_s$</td>
<td>81</td>
<td>13.20</td>
<td>.0702</td>
</tr>
<tr>
<td>$p_f$</td>
<td>19</td>
<td>13.20</td>
<td>-.0702</td>
</tr>
<tr>
<td>$p_s A_s + p_f A_f$</td>
<td>-</td>
<td>-</td>
<td>.25*</td>
</tr>
<tr>
<td>$w_1 A_s + w_2 A_f$</td>
<td>-</td>
<td>-</td>
<td>.52**</td>
</tr>
<tr>
<td>$A_t$</td>
<td>1.16</td>
<td>.82</td>
<td>-</td>
</tr>
</tbody>
</table>

*p < .01

**p < .001

$^a_{w_1} = .45$ and $w_2 = -.18$ were calculated by regression analysis
indicates that failure negates the positive attitude toward trying.

The correlation between \( A_t \) and the sum \( p_s A_s + p_f A_f \) was .25 at \( p < .01 \), which is lower than expected. Regression analysis on \( A_t \) as the dependent variable yielded different weights for the independent variables \( A_s \) and \( A_f \), as shown in Table 12. The negative weight for \( A_f \) is consistent with the negative zero-order correlation with \( A_t \). However, the resulting multiple regression coefficient of .52 is only slightly higher than the zero-order coefficient between \( A_t \) and \( A_s \), indicating that \( A_f \) does not significantly contribute as a predictor of \( A_t \).

The multiple correlation of \( A_t \) and \( A_f \) is still lower than expected, indicating that the items concerning attitudes toward trying and succeeding and toward trying and failing tap a concept different from the attitude toward trying. One possibility is that the former two items make the possible outcomes more salient, whereas the attitude toward trying reflects the attitude toward the process, or the steps one has to go through in order to reduce weight.

This assumption led me to return to hypothesis 1 which concerns the determinants of the intention to try. A regression analysis was performed on \( I_t \) with the independent variables \( A_t \) and \( SN_t \) entered at step 1, and \( A_s \) and \( A_f \) entered at step 2. Results are presented in Table 13. The analysis indicates that particularly \( A_s \) contributes as a source of variance of \( I_t \) beyond the contributions of \( A_t \) and \( SN_t \), bringing the multiple correlation coefficient up to .68.
Table 13

Multiple Correlations with Intention to Try

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Corr w. I_t</th>
<th>Regression R</th>
<th>Mult R sq. R change</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A_t)</td>
<td>1.6</td>
<td>.82</td>
<td>.50</td>
<td>.24</td>
<td>.506</td>
<td>.249</td>
</tr>
<tr>
<td>(A_f)</td>
<td>5.4</td>
<td>1.24</td>
<td>-.24</td>
<td>-.06</td>
<td>.583</td>
<td>.007</td>
</tr>
<tr>
<td>(A_s)</td>
<td>1.3</td>
<td>.56</td>
<td>.63</td>
<td>.44</td>
<td>.679</td>
<td>.120</td>
</tr>
</tbody>
</table>
Hypothesis 5

The interaction between subjects' own expectations of weight loss and self-knowledge will correlate highly with successful weight loss.

In addition to the behavioral, planning, and control indices examined under hypothesis 2, we might consider how well each person can predict her own success. At stage 1, subjects were asked to rate on a scale from 1 to 7 how likely it is that they actually will reduce weight over the next six weeks (items 13 and 14 on Part B of Questionnaire 1). Correlations between expectation and the weight loss index are shown in Table 14.

In general, expectation was not a successful predictor of weight loss. The correlation over the entire sample population was .17. Breaking the sample into sub-populations, none of the correlations reached .5, but some patterns are revealed.

Among subjects who scored low on self-efficacy, general self-knowledge, or self-knowledge with respect to weight loss, there was no correlation between expectation and weight loss. Among those who scored higher on these scales, there were positive correlations.

There is a striking difference between groups separated according to physiology. Those subjects who were more than 12 pounds overweight had a correlation near zero between expectation and weight loss, and those who became overweight at 17 years or younger had a negative correlation. The less overweight group and the group
Table 14
Correlation between expectation and Weight Loss Index for Sub-Populations

<table>
<thead>
<tr>
<th>Entire population</th>
<th>.17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount overweight</td>
<td>&lt; 12 lbs</td>
</tr>
<tr>
<td></td>
<td>≥ 12 lbs</td>
</tr>
<tr>
<td>Age became overweight</td>
<td>&lt; 17</td>
</tr>
<tr>
<td></td>
<td>≥ 17</td>
</tr>
<tr>
<td>Past experience</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>no</td>
</tr>
<tr>
<td>Action-vs State-Orientation</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>low</td>
</tr>
<tr>
<td>Ego strength</td>
<td>high</td>
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<tr>
<td></td>
<td>low</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>low</td>
</tr>
<tr>
<td>General self knowledge</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>low</td>
</tr>
<tr>
<td>Self-knowledge wrt weight loss</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>low</td>
</tr>
</tbody>
</table>
that became overweight at a later age have positive correlations between expectation and weight loss.
CHAPTER IV

DISCUSSION

The results of this study lend some support to the theory of planned behavior. The attitude toward trying to perform a behavior and the subjective norm together predict the intention to try. Different from the theory of reasoned action, the intention is not the immediate determinant of actual behavioral performance. The intervening variables involve the behavioral attempt and the level of control over the behavior in question.

The data indicates several points that might be investigated more closely in further research. When considering the attitude toward trying to perform a behavior, there are often two components of the attitude. If the behavior is complex and requires a set of preparatory actions, the attitude toward the outcome is separate from the attitude toward performing the preparatory steps. In the present study I had not written questionnaire items to separate the two concepts. However, the attitude toward trying to reduce weight does appear to have tapped a concept different from the attitude toward trying and succeeding and the attitude toward trying and failing. It is suggested that the former attitude largely reflects the attitude toward the process, and the latter two attitudes reflect the attitude toward the possible outcomes (failure and success).

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Both of these concepts contribute to the intention to try to perform the behavior.

The link between the intention to try and the behavioral attempts was weak. It is quite possible that the particular behaviors we had chosen did not exhaust the set of behaviors that reflect a behavioral attempt. However, it is also possible that when considering a behavior as complex as weight reduction, there is yet another intervening step that has been neglected in the model—development of a plan. A person might intend to reduce weight, but if he cannot conceive of the particular actions he will have to perform in order to reach his goal, he will never get past the intention. Only after the particular set of specific actions have been chosen i.e. only after a plan has been developed will the person act.

Development of an explicit plan is not necessary for everybody, however. An individual who has previously gone through the steps to reach the goal already has an implicit plan, without having to spell it out explicitly. Further research might examine the link between the intention to try and the development of a plan—who develops a plan and to what extent it reflects an attempt.

The indices of the behavioral attempt and the development of a plan were significant determinants of attainment of the goal behavior. Breaking the sample into sub-populations, it was found that planning contributed to successful weight reduction in all groups except the one composed of subjects who had successfully lost weight in the past. It appears that for these subjects, spelling out an
explicit plan of action is a redundant procedure since they already have an implicit plan based upon past experience.

The sample was divided into sub-populations according to 8 dimensions that had been expected to reflect the level of control: amount of overweight, age at which the person became overweight, past experience, action- vs. state-orientation, ego strength, self-efficacy, general self-knowledge, and self-knowledge with respect to weight reduction. Except for groups separated according to past experience, all high-control groups exhibited higher multiple correlations between weight loss and the behavior and planning indices. Among the individual difference scales, self-efficacy and general self-knowledge most strongly reflected the level of control.

Including the interaction of self-efficacy and self-knowledge with the behavioral attempt into the multiple regression equation significantly contributed to the correlation with weight loss. However, there were still differences between groups separated according to physiology. This indicates that the amount of overweight and the age at which one becomes overweight also reflect level of control.

The group that had past experience and the group that lacked past experience exhibited nearly equal multiple correlations between weight loss and the planning and behavioral indices and the individual difference-behavioral index interactions. Though the independent variables were nearly equally good predictors, the importance of each of the variables differed between the two groups. Whereas the first group
made no use of a plan, what the second group lacked in terms of experience, they made up in developing a plan.

Expectation, or prediction of one's own success at the outset, was not a strong predictor of actual success. However, some sub-populations were better predictors of their own success than others. Those who rated higher on the self-efficacy and self-knowledge scales were better predictors. Also, those who were less overweight and those who became overweight at a later age knew better what they could expect of themselves in terms of weight reduction.
Figure 1. Schematic presentation of the theory of reasoned action

Figure 2. Schematic presentation of the theory of planned behavior.
FOOTNOTES

1. Personal communication.
2. Personal communication.
REFERENCES


APPENDIX
Attempts, Control, and Weight Reduction: Stage 1

This investigation deals with people's intentions to reduce weight. You will be asked to answer a set of questionnaires concerning your attitudes, intentions, past experience in losing weight, and factors that might reflect control. The latter two questionnaires will also ask about performance of specific behaviors related to weight reduction.

The study is divided into three stages. The first stage involves weighing yourself and filling out the initial questionnaire. This procedure should take about one hour. The second stage involves filling out a brief schedule in your home on a weekly basis. The third stage involves a final weigh-in and completion of a second questionnaire. This session should take about 40 minutes. You will receive one experimental credit for participation in each stage of the study—a total of 3 credits.

As in all experiments, your participation in the present study is voluntary; you may discontinue your participation at any time and still receive credit for the stages in which you fully or partially participated.

The experimenter will be glad to answer any questions you may have at this point.

Thank you for your cooperation.
Informed Consent

I understand that I will be asked to complete a set of questionnaires concerning my attitudes and intentions to reduce weight. Questionnaire items will also ask about performance of specific behaviors related to weight reduction. Additionally, I will be asked to weigh myself on two occasions. I will receive 1 experimental credit for participation in each stage of the experiment: a total of up to 3 experimental credits. I also understand that I may request further information about this study at any time and that I am free to withdraw my consent and discontinue participation in this study, without penalty, at any time. All information that I will provide is confidential and will be treated accordingly.

Signed __________________________
Date ___________________________
Part A

Name ________________________________

Local telephone number ________________________________

During what hours can you be reached? ________________________________

Local mailing address ________________________________

age___, height___, present weight___ (lbs.)

1. Have you ever been on a reducing diet? _____

2. If yes, did you succeed in losing weight? _____ How much? _____

3. Are you dieting now? _____

4. How often are you dieting?
   never____, rarely____, sometimes____, usually____, always____

5. Are you exercising now? _____

6. How often do you go on an exercise regimen?
   never____, rarely____, sometimes____, usually____, always____

7. What is the maximum amount of weight that you have ever lost within one month? _____

8. Why did you lose the weight? (reducing diet, exercise, reasons of health or prolonged illness, change of environment, etc.) ________________________________

9. In a given week how much can your weight fluctuate?
   Maximum weight gain____
   Maximum weight loss____

10. In a typical week how much does your weight fluctuate? _____

11. What is your ideal weight? _____
**Part I**

On the following pages you will find various statements to be judged and, beneath each, a set of scales. You are to rate each statement on each of the scales following the statement. Here is how you are to use these scales:

If you feel that the statement above the scale is very closely related to one end of the scale, you should place your x as follows:

- good: good: good: good: good: good: bad

or

- good: good: good: good: good: bad: bad

If you feel that the statement above the scale is quite closely related to one or the other end of the scale (but not extremely), you should place your x as follows:

- harmful: harmful: harmful: harmful: harmful: harmful: beneficial

or

- harmful: harmful: harmful: harmful: harmful: beneficial: beneficial

If the statement seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should place your x as follows:


or


The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the things you are judging.
If you consider the statement to be neutral on the scale, both sides of the scale equally associated with the statement, or if the scale is completely irrelevant to the statement, then you should place your x in the middle space:

likely___:___:___:X:___:___:unlikely

IMPORTANT:
1. Place your x's in the middle of spaces, not on the boundaries.
2. Be sure you check every scale for every statement.
3. Never put more than one x on a single scale.
12. Do you consider yourself overweight? 

13. If yes, how many pounds over your desired weight are you now? 

14. If not, have you ever been overweight? If not, go to item 17. 

15. How many pounds over your desired weight were you when you were most overweight? 

16. How old were you when you became overweight? 

17. If you wanted to lose weight, how many pounds would be a reasonable goal for you over a six-week period? 

18. How much do you expect to weigh six weeks from now?
1. For me to reduce weight during the next six weeks would be
   good _________:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____:_____
8. For me to **try to reduce** weight over the next six weeks would be:
   - good
   - harmful
   - desirable

9. Most people who are important to me think I should **not** try to reduce weight over the next six weeks.

10. Most people who are important to me would **oppose** supporting my trying to reduce weight over the next six weeks.

11. I will **try** to reduce weight over the next six weeks.

12. I am determined to reduce weight over the next six weeks.

13. I expect that I actually **will** reduce weight over the next six weeks.

14. **My best estimate at this point is that I will definitely not** reduce weight during the next six weeks.
Use the following scale as a guideline to answer the next two questions. You can use any number between 0 and 100, just so it is closest to how you feel.

0—definitely not
20—probably not
40—maybe not
60—maybe
80—probably
100—definitely

15. On a scale from 0 to 100, what is the likelihood that if you try you will manage to reduce weight over the next six weeks?_____

16. On a scale from 0 to 100, what is your best estimate that an attempt on your part to reduce weight would be successful?_____
Part C

Often when people intend to lose weight they set up detailed diets, develop exercise regimens, or make other plans to help motivate themselves. Others simply plan to eat less or to be more active. If you intend to reduce weight, how do you intend to go about doing so? Describe your plans to the extent that you have thought about them.
Part 2

Read each statement and decide whether it is true as applied to you or false as applied to you. Mark your answers in the space provided next to each statement.

<table>
<thead>
<tr>
<th></th>
<th>Completely False</th>
<th>Mainly False</th>
<th>Partly True</th>
<th>Mainly True</th>
<th>Completely True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
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<td>5</td>
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</tbody>
</table>

1. For me to reduce weight over the next six weeks would be difficult.
2. I have the information needed to reduce weight over the next six weeks (possible diets, gym hours, etc.).
3. I can acquire the information needed to reduce weight over the next six weeks.
4. I will have the time and opportunity to do things necessary to lose weight over the next six weeks.
5. I can muster the will power and determination needed to reduce weight over the next six weeks.
6. I have control over my own weight.
7. The main thing that affects my weight is what I eat.
8. When I diet and exercise, my body responds.
9. I can tell in advance if I will keep to a diet.
10. I can tell in advance if I will keep to an exercise plan.
11. I know how much weight I can expect to lose.
12. I find it difficult to know in advance how hard it will be to reduce weight.
13. I sometimes feel uneasy without knowing what is bothering me.
14. I can always tell what other people think of me.
15. I have a pretty good idea what my life will be like 10 years from now.
16. I can always tell whether a compliment I receive is given honestly or not.
17. Many of the things I do turn out to be less fun than I thought they would be.
18. I can usually tell in advance whether I will enjoy an upcoming event.
19. Sometimes I feel happy or sad without really knowing why.
20. I usually know what is best for me.
21. I sometimes surprise myself by the things I think or do.
22. I still have a lot to learn about myself.
23. My achievements often fall far short of what I think I should be able to accomplish.
24. I know what I can expect of myself.
25. When I really look forward to doing something, I am rarely disappointed by the actual experience.
26. Any of my past decisions have been mistakes.
1. Completely False
2. Mainly False
3. Partly True & Partly False
4. Mainly True
5. Completely True

27. I do not find it very difficult to see myself objectively as I really am.
28. There is a big difference between my own view of myself and the way other people see me.
29. I am often surprised by the way people react to the things I say or do.
30. Sometimes I find myself in conflict with people and don't know how it happened.
31. If I could choose a place to live, I know exactly where that would be.
32. I do not have a hard time making decisions.
33. Self-control is no problem for me.
34. I tend to do things on the spur of the moment.
35. I often say and do things without stopping to think.
36. I have no trouble resisting temptation.
37. I prefer to buy something right away than to save my money for something better later on.
38. I am bothered by my lack of self-control.
39. I usually go to a second task only after I have completed the first one.
40. I have a lot of will power.
41. If I get sick, it is my own behavior which determines how soon I get well again.
<table>
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<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
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<td>Completely False</td>
<td>Mainly False</td>
<td>Partly True &amp; Partly False</td>
<td>Mainly True</td>
<td>Completely True</td>
</tr>
</tbody>
</table>

42. No matter what I do, if I am going to get sick, I will get sick.
43. Having regular contact with my physician is the best way for me to avoid illness.
44. Most things that affect my health happen to me by accident.
45. Whenever I don't feel well, I should consult a medically trained professional.
46. I am in control of my health.
47. My family has a lot to do with my becoming sick or staying healthy.
48. When I get sick I am to blame.
49. Luck plays a big part in determining how soon I will recover from an illness.
50. Health professionals control my health.
51. My good health is largely a matter of good fortune.
52. The main thing which affects my health is what I myself do.
53. If I take care of myself, I can avoid illness.
54. Whenever I recover from an illness, it's usually because other people (doctors, nurses, family, friends) have been taking good care of me.
55. No matter what I do, I'm likely to get sick.
56. If it's meant to be, I will stay healthy.
Attempts, Control, and Weight Reduction: Stage 2

Attached are six questionnaires. We would like you to complete these questionnaires, one each week, over the next six weeks. The purpose of these questionnaires is for us to obtain measures of your behavior and possible changes in your plans. In order for us to obtain valid information, be sure that you complete one questionnaire each week, and that you answer the questions honestly.

After three weeks, please put your three completed questionnaires in an envelope and send them through the campus mail to:

Deborah Schifter
Department of Psychology
Tobin Hall.

We will ask you to bring the remaining questionnaires with you when you return for our final session. If you have any questions contact Deborah Schifter, Tobin 633 or call 256-0286.

You will receive 1 experimental credit for participation in this stage of the study.
Name

Date on which questionnaire is completed

Please indicate the extent to which you engaged in each of the following behaviors over the past week by using the following scale:

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<td>Completely False</td>
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<td>Partly True &amp; Partly False</td>
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1. I avoided long periods of inactivity (watching TV, just sitting around, etc.).
2. I avoided excessive sleeping or napping during the day.
3. I walked wherever possible instead of riding the bus, driving a car, or riding an elevator.
4. I did exercise such as jogging, calisthenics, etc., on a regular basis.
5. I participated in sports on a regular basis (swimming, tennis, skiing, bike riding, basketball, etc.).
6. I avoided snacking between meals and in the evenings.
7. I cut down on all starchy foods (sweets, bread, etc.).
8. I avoided being in places where I might be tempted to eat starchy foods and/or eat too much (restaurants, bakeries, ice cream parlors, etc.).
9. I decreased my food intake in general by eating lighter meals, not having seconds, and not overeating.
10. I maintained a balanced diet by eating all the essential nutrients.
11. I ate on a consistent and regular schedule.
12. I kept to a minimum drinking of alcoholic beverages.
13. I refrained from buying sweets or snacks that might tempt me at home.

14. I sought information about dieting (spoke to a doctor, read a book, etc.).

15. I sought information about exercising (asked about the gym, priced exercise equipment, etc.).

16. I bought an item that I need in order to exercise (sportswear, exercise equipment, etc.).

17. I asked a friend to diet with me.

18. I asked a friend to exercise with me.

19. I intend to try to reduce weight during the coming week.

20. When I diet and exercise, my body responds.

21. I have control over my own weight.

22. I have applied considerable effort to keep to my intentions.

The following questions refer to the plan of action which you described in the first questionnaire.

23. I have kept to my own plan.

24. I have made the following changes and additions to my plan:
Attempts, Control, and Weight Reduction: Stage 3

This is the final questionnaire of the study. You will be asked to answer a set of questions concerning your attitudes, intentions, and success in carrying out your intentions to reduce weight. You will also be asked about more general personality variables.

The questionnaire should take about 40 minutes to complete. You will receive 1 experimental credit for participation in this stage of the study.

As previously, your participation in the study is voluntary. You may discontinue your participation at any time and still receive credit.

The experimenter will be glad to answer any questions you may have at this point.

Thank you for your cooperation.

Informed Consent

I understand that I will be asked to complete a set of questionnaires concerning my attitudes, intentions, and success in carrying out my intentions to reduce weight. The questionnaires will also ask about more general personality variables. Additionally, I will be asked to weigh myself. I will receive 1 experimental credit for participation in this stage of the study. I also understand that I may request further information about this study at any time and that I am free to withdraw my consent and discontinue participation in this study, without penalty, at any time. All information that I will provide is confidential and will be treated accordingly.

Signed______________________________

Date______________________________
Part A

On the following pages you will find various statements to be judged and, beneath each, a set of scales. You are to rate each statement on each of the scales following the statement. Here is how you are to use these scales:

If you feel that the statement above the scale is very closely related to one end of the scale, you should place your $x$ as follows:

$$\text{good}_x:____:____:____:____:____:____:\text{bad}$$

or

$$\text{good}:____:____:____:____:____:____:x_\text{bad}$$

If you feel that the statement above the scale is quite closely related to one or the other end of the scale (but not extremely), you should place your $x$ as follows:

$$\text{harmful}:X:____:____:____:____:\text{beneficial}$$

or

$$\text{harmful}:____:____:____:____:X:____:\text{beneficial}$$

If the statement seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should place your $x$ as follows:

$$\text{foolish}:____:X:____:____:____:\text{wise}$$

or

$$\text{foolish}:____:____:____:X:____:\text{wise}$$

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the things you are judging.
If you consider the statement to be neutral on the scale, both sides of the scale equally associated with the statement, or if the scale is completely irrelevant to the statement, then you should place your x in the middle space:


IMPORTANT:

1. Place your x's in the middle of spaces, not on the boundaries.
2. Be sure you check every scale for every statement.
3. Never put more than one x on a single scale.
Name

Present weight

1. Have you tried to reduce weight?
   If not, go to item 4.
2. I have been
   successful: unsuccessful in reducing weight.
3. My attempts to lose weight have been
   fruitful: worthless
4. Had you intended to reduce weight?
   If not, go to item 7.
5. I have applied
   considerable: little effort to reduce weight.
6. I intend to continue trying to reduce weight.
   true: false
7. For me to reduce weight would be
   good: bad
   harmful: beneficial
desirable: undesirable
8. For me to try to reduce weight would be
   good: bad
   harmful: beneficial
desirable: undesirable
Part 3

Read each statement and decide whether it is true as applied to you or false as applied to you. Mark your answers in the space provided next to each statement.

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1. It is difficult for me to reduce weight.
2. I have the information needed to reduce weight (possible diets, gym hours, etc.).
3. I have the time and opportunity to do things necessary to reduce weight.
4. I can muster the will power and determination needed to reduce weight.
5. I have control over my own weight.
6. The main thing that affects my weight is what I eat.
7. When I diet and exercise, my body responds.
The following items refer to your own plan of action.

1. During the last six weeks, did you make up any additional incentives to help motivate you to reduce weight (support groups, special rewards, competition with a friend, etc.)? If yes, what were they?

2. If you had an exercise regimen, did you make any alternate plans in case you found you could not do your regular exercise at any time? If yes, what were they?

3. If you kept to a particular diet, did you make any alternate plans in case you chose to go off your diet for a special occasion? If yes, what were they?

4. Did you make allowances for "cheating" in your diet?
Part D
HAKEMP SCALE

The following scale describes common situations we face in our daily lives. Two response alternatives are provided for each situation. Read the description of the situation carefully and then place a check mark in front of the alternative that is most characteristic of your reaction to the situation.
1. When I have to work at home
   ___ I often find it difficult to get started
   ___ I usually start right away

2. When I lose something of value and can't find it
   ___ I have a hard time getting over it
   ___ I soon stop thinking about it

3. When some task is waiting for me
   ___ I often think how nice it would be if I had already taken care of it
   ___ I focus my attention on how I can quickly get it done

4. When I have worked on a project for weeks and everything turns out wrong
   ___ it takes a long time before I get over it
   ___ I don't let it bother me for very long

5. When I get lucky unexpectedly
   ___ I think about it over and over again
   ___ I don't think about it very long

6. When I feel like renewing an acquaintance
   ___ I immediately try to arrange a time for a meeting
   ___ I decide to do it sometime soon

7. When I am idle at home and feel like doing something
   ___ I quickly decide what to do and don't think much about other possibilities
   ___ I carefully consider several possibilities before making up my mind

8. When I have a lot of important things to take care of
   ___ I often don't know where to begin
   ___ it is easy for me to make a plan and then stick to it
9. When I have accomplished something really important
   _____ I soon start thinking about other matters
   _____ I can't think about anything else at first

10. When something breaks down unexpectedly
    _____ it takes a while before I can get myself to do something about it
    _____ I undertake the necessary steps immediately

11. When I accidentally drop a new appliance
    _____ I concentrate fully on what should be done
    _____ I can't stop thinking about how this could have happened

12. When I try something new that I have never tried before and I am successful at it
    _____ I keep thinking how everything seems to be going my way
    _____ I soon think about other matters

13. After repeatedly winning an interesting game
    _____ I like to turn to other things for a change
    _____ I could play on and on

14. When I have to do something unpleasant but important
    _____ I prefer to do it right away
    _____ I avoid doing it until it is absolutely necessary

15. When my works receives an unexpectedly negative evaluation
    _____ it takes a while before I get over my disappointment
    _____ I redouble my efforts

16. If I won a great deal of money (e.g., in a lottery)
    _____ I would immediately think about what to do with the money
    _____ I would keep thinking how lucky I had been

17. When something that is important to me keeps going wrong
    _____ I gradually get discouraged
    _____ I forget about it for a while and do something else
18. When I notice that I have been used
   I can't stop thinking about it for a long time
   I soon forget about it

19. After performing extremely well in an important contest
   I like nothing better than to keep going
   I like to do something else for a change

20. After receiving an award for outstanding achievement
   I like to keep practicing my skills in the same subject matter
   I prefer to turn my attention to a different subject matter

21. When several things go wrong for me on the same day
   I really don't know what to do with myself
   I can still carry on as though nothing had happened

22. When I have a hard time bringing myself to deal with a difficult problem
   the problem looms like a mountain
   I try to find a way of tackling the problem without overly inconveniencing myself

23. After winning decisively at a game
   I soon lose interest in the game
   I am eager to keep playing

24. When I have decided to buy just one item of clothing and I find several things I like
   I often waver back and forth, trying to decide which I should buy
   I usually don't think much about it and make a quick decision
The following questions ask you to assess your competence in various areas of performance. Indicate your responses to the following questions in the blank to the left of each question. Just give a number from 0 to 100 that shows how you feel about your ability. Zero would be "never" and a hundred would be "all the time." You can pick any number you want, just so it is closest to how you feel.

1. When you try some new sport or physical activity, what percent of the time do you feel you have not mastered the skill as well as the average person?

2. When you face new situations which require fast decisions, what percent of the time can you make them effectively?

3. When you try to reach important goals of any kind, what percent of the time do you feel you have really succeeded?

4. When you are required to direct the activities of others, in what percent of the cases can you feel that you fail to receive the cooperation and respect of those directed?

5. When you are attempting to get someone of the same sex to form a favorable impression of you, what percent of the time do you think you are unsuccessful?

6. What percentage of people of your own age and sex have a more pleasing personal appearance than you?
7. In situations where it is necessary for you to speed up your performance in order to meet a deadline, in what percent of the cases can you do so without sacrificing the quality of your work?

3. When you enter a new college course what percent of the time do you feel uncertain that you will do as well as the average student?

9. When doing things that interest you most, what percent of the time are you satisfied with your performance?

10. When you are part of group activities, what percent of the time do your ideas and opinions influence the group?

11. When put in a situation which is new and unfamiliar, what percent of the time do you feel you are not able to function adequately?

12. When you have to take the initiative and act independently of others, what percent of the time can you handle things on your own?